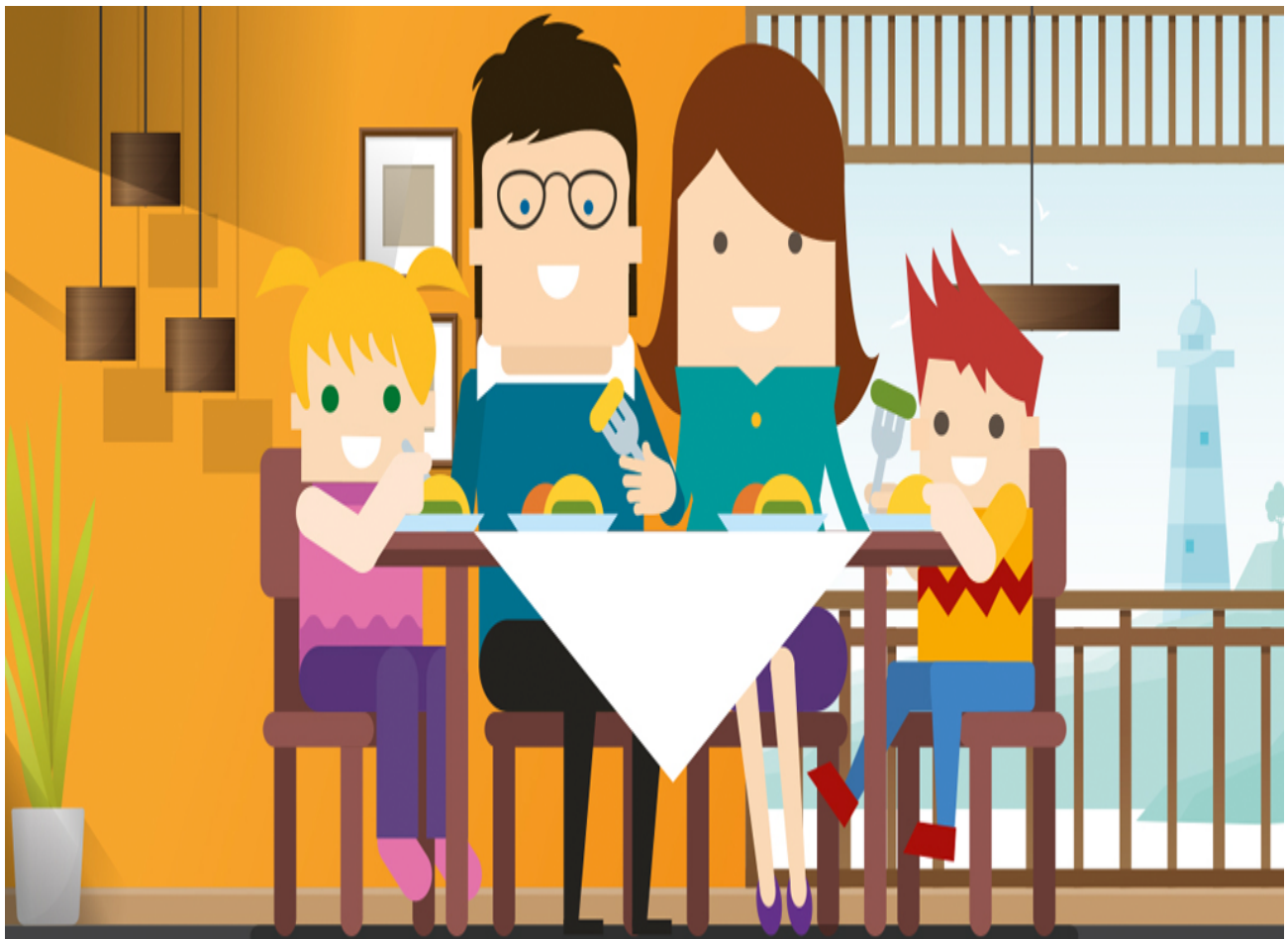


Resource

## Diet

There is a huge amount of dietary advice aimed at people with RA. This article summarises some of the dietary advice for which there is evidence of benefit for people with RA.

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Introduction

There is a huge amount of dietary advice aimed at people with rheumatoid arthritis. Unfortunately, the vast majority is unsubstantiated and cannot be generalised to everyone with the condition.

This article summarises some of the dietary advice for which there is evidence of benefit for people with RA and the tables below each section gives examples of suitable food sources.

## Watch your Weight

Long term, uncontrolled inflammatory processes have a negative effect on body composition, in particular, reducing muscle mass and increasing fat mass. Maintaining a healthy weight is important in managing RA as excess weight can impact the effectiveness of RA medications and increase disease activity.

Excess weight is bad for joints and overall health. The way our joints work means the pressure on the knee joint is 5-6 times your body weight when you walk. If you are overweight, even small amounts of weight loss can have a big impact.

Little or no exercise will greatly increase the risk of weight gain if dietary intake is not altered accordingly, particularly as we get older. It is much more difficult to lose excess body weight once it has been gained. So, if you are unable to be more active, take regular exercise within your own limits, and monitor what you eat from time to time to avoid gaining unwanted lbs or kgs. It can be helpful to keep a diet diary for a week or two to help identify when and what you eat, where you are eating unnecessarily and what you think could be reduced. Snacks could be cut out or swapped for a less calorific food.

Being a healthy weight is essential. If you are overweight, you are putting excess pressure on your joints and may increase levels of inflammation. Conversely, if you are underweight, there may not be enough muscle to help support your joints. You should aim to be a Body Mass Index (BMI) of 20-25kg/m<sup>2</sup>. Use a BMI calculator online or ask your GP to calculate this. Some treatments, such as steroids can increase your appetite; it is, therefore, important to always consider what you are eating.

## The Mediterranean Diet

The Mediterranean way of eating is based on daily intakes of fresh fruits and vegetables, nuts, beans and pulses, olive oil, wholegrain cereals and regular oily fish and poultry consumption.

Research suggests that consumption of a Mediterranean diet (MD) reduces the incidence of clinical symptoms related to the immune system and chronic inflammation.

Research specifically with RA has shown an improvement in clinical symptoms when people with RA followed an MD; benefits included reduced swollen and tender joints, reduced duration of morning stiffness and improved general wellbeing.

The MD is a healthy way to eat in general and will have many health benefits beyond improving RA, such as reducing the risk of some cancers and heart disease.

## Dietary Fibre, Prebiotics and Probiotics

Grains include wheat, corn, rice, oats, barley and rye and are a source of key nutrients such as antioxidants, vitamins, minerals and fibre, see Table 1. Foods referred to as 'whole grain' contain all three elements of the grain – the bran, germ and endosperm, e.g. whole grain bread which is made

from wheat flour containing all three elements. When a grain is 'refined' it has one or more of the grain elements removed, e.g. white bread which is made from wheat flour with the bran and germ removed.

Dietary fibre is the edible parts of plants which resists digestion and absorption in the small intestine to be completely or partially broken down by bacteria in the large intestine, see Table 1.

Probiotics?are the 'good' bacteria that can beneficially affect our health by improving the functioning of the gut, in restoring or maintaining a healthy balance. Bifidobacterium and Lactobacillus are the key strains of probiotics found in many different forms such as yoghurts, tablets, capsules and sachets.

Prebiotics?are types of carbohydrates that only gut bacteria can digest which in turn encourages their growth.

More research has been done on probiotics than prebiotics.

Several studies have shown altered gut bacteria in individuals with RA, and there is evidence that this alteration corresponds to the initiation of RA. There have been a number of human studies supporting the anti-inflammatory effects of supplementation with various probiotic strains in RA. In one study, female RA patients experienced a significant decrease in the number of tender or swollen joints, disease-activity scores (DAS) and blood markers of inflammation. In another, the anti-inflammatory effect of methotrexate was enhanced. It appears that including more dietary fibres supports the development of a healthier, more balanced gut bacteria profile, where a reduction in inflammatory reactions in the gut may result in less inflammation throughout the body

Table 1. Whole Grains and Source of Dietary Fibre

|              | Dietary Fibre Sources   |
|--------------|---|
| Whole Grains | 'high in fibre' = >6g fibre per 100g<br>a 'source of fibre' = at least 3g fibre per 100g. |
|              | Wholegrain pasta  |
|              | Wholegrain bread  |
| Wheat        | Porridge  |
| Rice         | Oat bran  |
| Oats         | High fibre breakfast cereals  |
| Corn         | Potato skins  |
| Rye          | Sweet potato  |
| Barley       | Beans – baked beans, chickpeas  |
| Millet       | Pulses  |
| Sorghum      | Vegetables  |
|              | Fruits, especially where you eat the skin and seeds                                       |
|              | Seeds, e.g. linseeds, chia seeds, sunflower   |
|              | Nuts, e.g. almonds, hazelnuts, peanut butter  |

### Fish Oils and Omega-3 fatty acids

The long-chain omega-3 fatty acids eicosapentaenoic acid and docosahexaenoic acid (known as EPA and DHA, respectively) have an important role in the inflammatory pathway. Omega-3 fatty acids

continue to show potential as immune-suppressants and anti-inflammatory agents. They have been seen to slow the development of RA in animal models and reduce disease severity. In a review of 23 studies, a fairly consistent but modest benefit was seen on joint swelling and pain, duration of morning stiffness, global assessment of pain and disease activity, and use of NSAIDs in patients taking fish oils, although none of these studies lasted more than 4 months, so longer-term effects are unknown. Benefits have been noted to continue for 6 months after withdrawal of the omega-3 supplements. It can take up to 3 months to see the benefits of supplements; therefore, perseverance is important.

The amount of omega-3 fats necessary to gain symptomatic benefit is around 3g/day (i.e. total EPA + DHA). The amount of EPA + DHA varies greatly between fish oil supplements. For example, a typical fish oil capsule (1000mg) may contain 120mg EPA + 180mg DHA (=300mg total omega-3 fats). So, 3 capsules/day will provide almost 1g total omega-3 fats.

Omega-3 fats can also be obtained from food. Natural sources of omega-3 fatty acids are oily fish such as mackerel and fresh tuna (not tinned tuna). Choose fish from sustainable sources where possible by checking for Marine Stewardship Council (MSC) certified products or refer to The Good Fish Guide from the MSC.

Eating oily fish 2 or 3 times a week provides a reasonable intake of EPA and DHA, although the benefits on joint symptoms are not clearly defined. Omega 3 fats from plant sources, e.g. linseed and evening primrose have a weaker effect on inflammation and are of limited benefit.

Note: If taking fish oil supplements, you should avoid fish liver oil capsules (e.g. cod liver oil). These supplements contain high amounts of fat-soluble vitamins A and D, which, if taken in large quantities over a period of time, can have toxic effects. Always use pure fish oil products instead. Fish oils can interact with some medications, e.g. Warfarin. Always seek medical advice before starting supplements.

Liquid fish oil may contain a higher concentration of omega-3 fatty acids and may be a preferable way of taking fish oil for some people. However, omega-3 fats are highly perishable and destroyed by light, heat and air and will become rancid quickly once the bottle is opened. Capsules help to prevent rancidity as the fish oil is stored in a sealed environment.

Whilst Omega 3 fats reduce inflammation omega 6 fats may increase inflammation. It is therefore important for you to reduce omega 6 fats in the diet whilst increasing omega 3. Therefore, to enhance the effect of omega-3 fats, it would seem prudent to increase consumption of omega-3 fats and reduce intake of omega-6 fats, for example by replacing sunflower oils/margarines with olive oil/margarine or rapeseed oil (vegetarians can get omega-3 fats from flaxseed oils, starflower and borage oils).

Omega-6 fats are found mainly in foods such as sunflower oils and margarines, seeds and nuts (though as you will see later on in the article, nuts are commonly taken as part of the Mediterranean diet, as the Mediterranean diet represents an overall healthy way of eating but might therefore need minor alterations).

Reducing inflammation is not just important for improving your joint pain and stiffness, but it will also reduce your risk of heart disease, which people with RA are at increased risk of.

Table 2. White Fish, Oily Fish and Plant Sources of Omega-3

| Whitefish<br>1 portion per<br>week,<br>1 portion = 140g | Omega-3 Oily Fish<br>Sources<br>2 portions per week<br>1 portion = 140g (a<br>small fillet) | Omega-3<br>Plant Sources ?                         |
|---|---|--|
| Cod   | Sardines  | Walnuts  |
| Haddock   | Mackerel  | Pumpkin seeds                                      |
| Plaice  | Herring   | Vegetable oils, e.g. rapeseed and linseed oils     |
| Pollack   | Salmon  | Soya and soya products, e.g. beans, drinks, tofu   |
| Coley   | Snapper   | Green leafy vegetables                             |
| Dover   | Pilchards   | Some fortified<br>eggs, yoghurt, bread and spreads |
| Sole  | Trout   |  |
| Dab   | Sprats  |  |
| Flounder  | Crab (fresh)  |  |
| Red Mullet  | Whitebait   |  |
| Gurnard   |   |  |

### Fruits, Vegetables and Antioxidants

Antioxidants are phytochemicals, non-nutrient plant compounds present in fruits and vegetables. Their regular consumption has been shown to diminish the symptoms of chronic diseases, including rheumatoid arthritis.

Antioxidants are found extensively in fruits and vegetables, particularly brightly coloured varieties such as oranges, apricots, mangos, carrots, peppers/capsicums, and tomatoes. The most common antioxidants are vitamins C, E and A, but there are many more, such as the carotenoids, e.g.  $\beta$ -carotene,  $\beta$ -cryptoxanthin, luteins and lycopenes, but many remain as yet unidentified.

As part of the inflammation associated with RA substances called free radicals are produced which can lead to damage in the body. Antioxidants found in brightly coloured fruit and vegetables can help limit the damage that these do. They can also have an anti-inflammatory effect. This is important for both improving your RA symptoms and reducing your risk of heart disease.

Antioxidants and the vitamins and minerals found in fruit and vegetables also support the immune system, which is of particular importance when taking many of the immune-suppressing drugs used to treat RA.

A diet rich in antioxidants may help to reduce the risk of developing RA and possibly dampen down the inflammatory response in established disease. However, this theory is based on evidence from epidemiological studies of diet and arthritis (i.e. studies that look at how often/how common disease is in large populations) and is not supported by scientific trials of using individual antioxidant supplements in patients with RA.

Fruit and vegetables are also low in calories and can help support a healthy diet and weight loss, see Table 3, for examples.

Vegetarian diets have been investigated by several research groups with four well-designed studies finding general benefits for patients with RA following a vegetarian diet compared to those on their usual diet. However, the reasons for this are as yet unclear. It is important to ensure that the resulting diet is well balanced. Other diets such as fasting and very restricted diets have shown benefits; however, they are not sustainable and carry significant health risks. Also, when returning to a normal diet, symptoms quickly re-appeared.

Table 3. Fruits and Vegetables

|  |  |
|--|--|
| Fruits                                 | Vegetables   |
| 2+ portions per day, 1 portion = 80g   | 4+ portions per day, 1 portion = 80g                       |
| Frozen, fresh or tinned in fruit juice | Frozen, fresh or tinned                                    |
| Seasonal Fruits                        | Seasonal vegetables  |
| Dried plums                            | Peas   |
| Grapefruits                            | Parsnip  |
| Grapes                                 | Mixed vegetables   |
| Blueberries                            | Green beans, carrots, Sweetcorn                            |
| Pomegranate                            | Green Leafy vegetables, e.g. mustard/collard greens, kale, |
| Mango                                  | spinach, lettuce, arugula, broccoli                        |
| Banana                                 |  |
| Peaches                                |  |
| Apples                                 |  |

## Vitamins and Minerals

There are specific vitamins and minerals that people with RA are more likely to be deficient in:

**Iron.** Anaemia is a deficiency of red blood cells to transport oxygen around the body. Anaemia can occur in people with RA as a result of a flare causing a reduced oral intake or from failing to choose iron-rich foods in the diet.

**Calcium.** Use of glucocorticoids (steroids) as part of RA treatment can put you at increased risk of developing osteoporosis, as steroids can impair calcium absorption. Choose lower-fat varieties of milk, i.e. semi-skimmed or skimmed, as they have the same calcium, if not more than, whole milk. If using soya milk or other alternatives, use calcium-enriched products. Remember, soya milk 'per se' on its own contains no calcium. Calcium, in conjunction with Vitamin D, is important for ensuring strong, healthy bones.

**Vitamin D.** Vitamin D is needed to help the body absorb calcium. Approximately 20% of daily Vitamin D requirement is obtained from the diet; the remaining 80% come from exposure to the sun on the skin (Cutolo). Vitamin D plays an important role in the functioning of the immune system and its response to infection. Vitamin deficiency is frequently being observed in RA, where evidence

suggests this is associated with a more rapid progression of RA (Vojinovic). It is worth checking vitamin D levels with your GP or Rheumatology team. as those with little exposure to the sun or increased requirements, may require a supplement, e.g. Adcal D3/ Calcichew.

Table 4. Dietary Sources of Iron, Calcium and Vitamin D

| Iron-rich Foods             | Calcium-Rich Foods                                | Vitamin D Sources          |
|-----------------------------|---|----------------------------|
| Lean red meat               | Yoghurt   |                            |
| Eggs                        | Milk  |                            |
| Green leafy vegetables      | Cheese  |                            |
| Peas                        | Almonds   | Oily fish,                 |
| Beans and lentils           | Sardines/pilchards (fish where you eat the bones) | Fortified breakfast cereal |
| Fortified breakfast cereals | Fortified soy drinks                              | Fortified margarine        |
|                             | Dark green leafy vegetables                       |                            |
|                             | Fortified cereal, milk or milk-substitutes        |                            |

### Dietary Supplements

There is little evidence that dietary supplements influence the course of RA. However, there is some evidence of they may be of benefit in managing inflammation, e.g. fish oils (see above).

Also, supplements may be prescribed by your specialist team/GP, e.g. folic acid if you are taking methotrexate and calcium and vitamin D if you are taking steroids. It is important that you take these supplements as they are to combat the side effects of medications. Always follow advice given by healthcare professionals.

Of course, some supplements work for some people and not others, and that's great as long as money is not being spent on an unproven remedy at the expense of a healthy diet.

### Conclusion

The evidence supporting dietary changes as a means of managing rheumatoid arthritis is still evolving. What we do know is that maintaining a healthy weight is important in managing RA disease activity, and it supports the effectiveness of RA medications. Eating a healthy, balanced diet is essential to achieving and maintaining a healthy weight, and the evidence suggests that people with RA can particularly benefit from consuming a Mediterranean-style diet. Try not to be too prescriptive; look at food as a whole. In this way, as you choose whole grains cereals, fruits, vegetables, fish and poultry, remembering to add lean red meat, oily fish, dairy products, nuts and seeds you will naturally include the vitamins, minerals, fibre and omega-3 fatty acids your body needs.

Making positive dietary changes can be empowering at a time when you may feel your condition is out of your control. However, if making major dietary changes, it is advisable to have a dietary assessment by a registered dietician. Referrals are usually made via GPs or hospital specialists.

Finally, remember that people with RA often have reduced immune function due to medications, particularly the newer 'biologics'. A reduced immune function may increase your risk of infection, so it is important to reduce your risk of food poisoning/infection by adopting good food hygiene principles,

see Table 5.

## Table 5. Food Safety Tips for People With RA

Following these simple tips will help reduce your risk of food poisoning/infection  
Always wash your hands before preparing food Use an anti-bacterial spray in the kitchen Check the temperature of your fridge Always check 'use by dates' Check food is well-cooked throughout before eating Avoid meat pâté Avoid blue vein (Stilton, Danish Blue) & mould-ripened cheeses (Camembert, Brie) Avoid raw egg and raw egg products Avoid unpasteurised foods Always wash fruit and vegetables before eating

## Further Reading

[www.bda.uk.com/resource/rheumatoid-arthritis-diet.html](http://www.bda.uk.com/resource/rheumatoid-arthritis-diet.html)

[www.fishonline.org](http://www.fishonline.org)

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References available on request

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## Read more

### [Exercise](#)

Exercise is important not just to reduce the risk of further joint damage but for reducing the risk of heart disease, improving muscle strength and mental wellbeing too. There are exercises for people at all stages of their RA journey.