BDA The Association of UK Dietitians

Food Fact Sheet

Diet and osteoarthritis

Arthritis is a condition that causes joint pain. This Food Fact Sheet is about the role diet has in managing symptoms of the most common arthritic condition, osteoarthritis (OA).

What is osteoarthritis?

OA commonly affects the large joints such as the knees and hips but frequently occurs in the hands, the base of the big toe and the spine. It is a condition that affects the whole joint, where cartilage breakdown and inflammation can lead to pain, discomfort and a reduced quality of life. In the UK, it is the fastest growing cause of disability. OA may run in families or can develop as a result of injury. It largely affects people later in life and obesity is a major risk factor.

There is currently no cure for OA, so treatment options are generally limited to the management of pain and symptoms. Though there is no evidence that elimination diets are effective in OA, there are a number of dietary strategies that may help you to ease its symptoms, as explained below.

Maintaining a healthy weight

The most important relationship between diet and OA is weight. Not only does being obese or overweight increase the strain on joints, but excess fat causes inflammation which can exacerbate symptoms. There is strong evidence that losing weight can reduce pain and improve physical function and mobility. If you are overweight or obese, losing 10% of your body weight will give optimum benefit, not only for symptoms but for overall health. This can be achieved by eating a healthy diet with plenty of fruits and vegetables. Incorporating exercise helps to maintain muscle while losing weight. OA has been linked to type 2 diabetes and cardiovascular disease; losing excess weight will also help to prevent or manage these conditions.

What fats should I be consuming?

The long-chain omega-3 polyunsaturated fatty acids found in oily fish have anti-inflammatory properties that may well be of benefit in OA. Aim to consume at least one portion of oily fish a week, preferably two, e.g. sardines, mackerel, salmon and tuna (though not tinned tuna). If this is not possible, consider a trial of fish-oil capsules; 1-2 capsules should supply 450 mg EPA+DHA per day. Although, strictly speaking, this is not enough to produce anti-inflammatory effects, it

is the dose that improved pain and function in a trial on knee OA patients and the dose recommended for reducing cardiac death. Omega-6 polyunsaturated fats (found in sunflower safflower, corn and grapeseed oils) are somewhat pro-inflammatory so may make symptoms worse, as may saturated fats. Replace them by oils and spreads rich in mono-unsaturated fats such as rapeseed oil and olive oil.

Cholesterol reduction

OA patients are more likely to have raised blood cholesterol than those without OA. There is some suggestion that lowering blood cholesterol will improve OA. In any case, if blood cholesterol is raised, it is important to make dietary changes to lower it – this will also benefit cardiovascular health. Collective dietary measures include:

- 2g/day of plant stanols/sterols - these can be found in proprietary fortified drinks, spreads, and yogurts;
- reducing the intake of foods high in saturated fat;
- increasing the intake of oats and other soluble fibres;
- eating nuts (30g /day);
- consuming soy protein (25g /day) e.g. tofu, soy milk, soy beans /edamame beans.

For more information on dietary changes to help lower blood cholesterol, please see the BDA Food Fact Sheet on Cholesterol.

Antioxidants

Antioxidants, found in certain animal and plant products, protect the body from damaging oxidation, so-called 'oxidative stress' which may be involved in the development and progression of OA. Antioxidants that may be relevant include vitamins A, C and E. Though evidence for the effect of these vitamins in OA is weak, it would be wise to ensure an adequate daily intake as part of a healthy balanced diet (Table 1 gives rich sources). Getting these nutrients from food as opposed to supplements is always preferable because they come with other nutrients.

The importance of vitamin D

Vitamin D is essential for bone and cartilage health. Between the months of April and October in the UK, sunlight is the primary source of vitamin D although it can also be obtained from dietary sources (Table 1).

Studies have shown that it may have a positive effect on muscular strength and balance. However, most people consume only small amounts in their diet. Taking a daily vitamin D supplement (e.g. 10-25 µg/day), especially during the winter months, will help to ensure sufficient status throughout the year. Maintaining a healthy weight may also improve the ability of your body to access vitamin D as it is sequestered in fat.

Should I be having more vitamin K?

Vitamin K may influence OA through its role in making bone and cartilage. Although evidence of benefit in OA is suggestive but currently limited, there is some suggestion that increasing vitamin K may be of benefit to those who are deficient, hence it is important to obtain it as part of a healthy balanced diet. Certain fats and oils (e.g. olive oil, margarine) contain small amounts of vitamin K and may also help its absorption from foods.

Food Avoidance

Several popular diet books on arthritis advocate avoiding foods such as dairy products or the nightshade vegetables (tomatoes, potatoes, bell peppers and aubergines). Though there is some evidence that food avoidance may help rheumatoid arthritis patients, there is no evidence of benefit in OA patients.

Table 1.
Dietary sources and recommended intakes of selected micronutrients

Vitamin A	Vitamin C	Vitamin E	Vitamin D	Vitamin K
carrots*, curly kale*, sweet potato*, liver products, cod liver oil RNI: 600-700 µg retinol equivalents/ day	citrus fruits, blackcurrants, raw green and red peppers RNI: 40 mg/ day	vegetable oils, margarine, wholegrain cereals, nuts and seeds Safe intake: 3-4 mg/day	oily fish, egg yolks and certain fortified products (e.g. spreads and cereals) RNI: 10 µg/ day	kale, spinach, lettuce, broccoli and Brussels sprouts Safe intake: 1 µg per kilogram body weight/ day

*as beta-carotene, a vitamin A precursor. Abbreviations: RNI: Recommended Nutrient Intake.

Key nutritional and lifestyle recommendations for OA

- Aim for a healthy BMI, i.e. between 18.5 and 25 kg/m2.
- If you are overweight or obese, take action to reduce your body weight by 10%.
- Regular exercise is likely to help symptoms by preserving muscle strength.
- Consume 1-2 portions of oily fish a week. If you cannot do that, consider trialling a fish-oil supplement (≥ 1.5 g fish-oil/ day).
- Use oils rich in mono-unsaturates (e.g. rapeseed oil and olive oil).
- Take dietary action to reduce your blood cholesterol, if elevated.
- During the summer months, aim for daily sunlight exposure (10-15 minutes without sunscreen) to increase vitamin D.
- Take a vitamin D supplement of 10-25 µg /day, when there is no sun exposure.
- Consume rich sources of vitamin K and the antioxidants, A, C, and E as part of a healthy balanced diet.

Dietary supplements

There is no good trial evidence to show that glucosamine, chondroitin, rose hip or turmeric help OA symptoms; studies claiming beneficial effects are more likely to be published than those that don't. Recent analysis of patient data has failed to find any support for glucosamine. However, if your diet is restricted or your appetite is poor, you should consider taking a multivitamin/mineral supplement containing the recommended intake amounts (RNI or RDA) of the nutrients listed in Table 1.

Summary

If you are overweight or obese, combining regular exercise with healthy eating to achieve weight loss is the most effective strategy to reduce joint pain. Increasing intake of long-chain omega-3 fatty acids and reducing blood cholesterol may be of some benefit and will improve cardiovascular health. To optimise intake of relevant micronutrients, eat food sources shown in Table 1. Discuss any change in diet or nutritional supplements with your rheumatologist, GP or dietitian.

Useful links: NHS: www.nhs.uk/Livewell/healthy-eating

Arthritis UK:www.arthritisresearchuk.org

Arthritis Action: www.arthritisaction.org.uk

Further information: Food Fact Sheets on other topics including Weight loss, Omega-3, Cholesterol, Vitamin D and Healthy eating are available at **www.bda.uk.com/foodfacts**

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The information sources used to develop this fact sheet are available at www.bda.uk.com/foodfacts