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Learning daily living strategies to manage your arthritis gives you a greater feeling of control and a more positive outlook.

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www.arthritis.ca



This brochure is based on the content of "Diet and Arthritis" provided by the Arthritis Research Campaign (www.arc.org.uk). It was reviewed and edited by an editorial review panel at Dietitians of Canada and members of The Arthritis Society's Medical Advisory Committee.



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The Arthritis Society's
**LIFESTYLE
SERIES**



Nutrition & Arthritis



ARTHRITIS  FIGHT IT!

www.arthritis.ca/nutrition or 1.800.321.1433



Contents

Introduction	4
Can changing my diet really help my arthritis?	4
How can I change my diet to help my arthritis?	5
Why is my weight so important?	6
How can I eat healthy and maintain a healthy weight?	9
Should certain foods be avoided?	14
What about food allergies?	14
Fasting diets for rheumatoid arthritis	14
Vegetarian diets for rheumatoid arthritis	14
Should I alter my diet if I have gout?	15
Other nutritional concerns	16
Are there any foods or food supplements which really do help arthritis?	20
What are fatty acids?	20
What is the difference between omega-3 and omega-6 polyunsaturated fatty acids?	21
Simple steps to increase your intake of omega-3 fats	22
Caution with fish liver oils	23
How many antioxidant-rich foods should I be eating?	23
Glucosamine sulphate and chondroitin for osteoarthritis	24
Vitamins and minerals for arthritis	24
Are there any foods or supplements that help arthritis?	25
What if I am losing weight unintentionally?	25
Can healthy eating help if I am taking medication?	26
What are the important points to remember about my diet?	26
Glossary	27
Further Reading	27
Useful Canadian Resources	28

Introduction

This booklet explains how the food you eat might affect your arthritis. It then gives advice on the most sensible diet to follow and answers the most common questions which people ask about food and arthritis. Terms which are in *italics* when they are first used are explained in the glossary at the back of the booklet.

There is a great deal of advice about diet and nutritional supplements for arthritis in magazines, books, and on the internet which can be confusing. Claims are made for many food supplements and diets, that they help with arthritis. Some of the advice, is given by companies who produce or sell food supplements, and who have an obvious interest in you buying their products! Some people end up taking expensive food supplements or following elaborate and inconvenient diets which do not help, or may even be harmful. Often the same results can be achieved by simpler, less expensive methods such as getting the promoted nutrients from the food you eat rather than taking supplements. Although a healthy diet is important, you should not stop or change your medical treatment without discussing your plan with your health care team first.

Can changing my diet really help my arthritis?

Yes. Healthy eating habits can help some people with arthritis. For example, if you are overweight and have arthritis, one of the most important things you can do to help yourself is to look at healthy eating and physical activity as ways to help you achieve and maintain a healthy weight. For others, healthy eating may give you the energy to complete your daily activities.

It is also important to consider whether your regular diet is giving you all the important basic nutrients. If it does not, then your general health will suffer and this may have an effect on your arthritis.

How can I change my diet to help my arthritis?

The first step towards good health is to follow the advice found in *Eating Well with Canada's Food Guide*. The right amounts and types of foods will help:

- meet your daily needs for vitamins, minerals and other nutrients for overall health and vitality.
- give you the energy you need for work and leisure activities.
- reduce your risk of other chronic conditions like type 2 diabetes, heart disease, certain types of cancer and osteoporosis.

Eating Well with Canada's Food Guide is a comprehensive tool which is designed to help people get the most from their daily food intake. Using a rainbow, all foods are divided into the four food groups: green is vegetables and fruit, yellow is grain products, blue is milk and alternatives, red is meat and alternatives. The guide then breaks down the recommended daily servings based on your gender and age and provides helpful tips on making the right choices to eating healthier. To learn more about, or to download your own free copy please visit www.healthcanada.gc.ca/foodguide

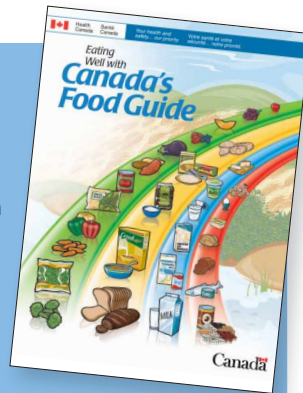
My Food Guide (www.myfoodguide.ca) by Health Canada allows you to build your own Food Guide, and can help you plan more balanced meals and snacks by using a wide selection of items from each of the four food groups, including multicultural options.

Current evidence suggests that omega-3 fatty acids (found in cold water fish like salmon or trout and nuts and seeds) are likely to be beneficial if you have an inflammatory type of arthritis (such as rheumatoid arthritis, psoriatic arthritis, or ankylosing spondylitis). Additional studies also show that *antioxidants* can help protect joints, and help reduce inflammation by neutralizing some of the body's chemicals which cause inflammation, and may even help prevent arthritis. Recent research has shown that people who eat plenty of fresh fruit and vegetables, particularly those containing vitamin C, seem to have a lower risk of developing inflammatory arthritis.

Advice relating to specific types of arthritis is given later in the booklet, so it is important to know what type of arthritis you have. All the points above are dealt with in more detail after we have explained why watching your weight is so important.

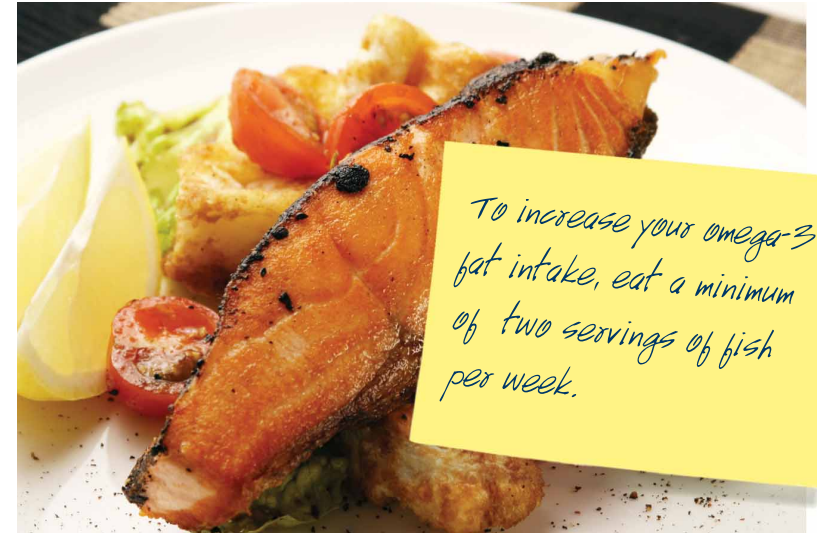
To make the most of Canada's Food Guide, you should include the minimum number of servings from each of the four food groups; if you cannot do this, you should speak to a Registered Dietitian to determine how to ensure you are getting adequate nutrients from the food groups that are missing. As well, it is best to:

- **Eat a variety from each food group to maximize your intake of vitamins, minerals, antioxidants and other nutrients specific to that food group.**
- **Choose more vegetables, fruits and whole grain breads and cereals and other high fibre foods.**
- **Pick leaner cuts of meat, eat fish and choose vegetarian sources of protein such as dried beans and other legumes.**
- **Limit the total amount of excess fats, especially from animal sources (including dairy) and switch to healthier fats and oils that come from vegetable and plant sources.**
- **Limit foods and beverages high in fat, sugar, alcohol or salt (sodium).**
- **Exercise on a regular basis.**



Why is my weight so important?

The most important link between your diet and arthritis is your weight. Being overweight puts an extra burden on your weight-bearing joints (back, hips, knees, ankles and feet) when they are already damaged or under strain. Because of the way joints work, the pressure in your knee joints is more than your body weight when you walk. Even a small weight loss can make a big difference to your joints. If you are overweight and have arthritis in any of your weight-bearing joints, losing weight will help you more than any food supplements.

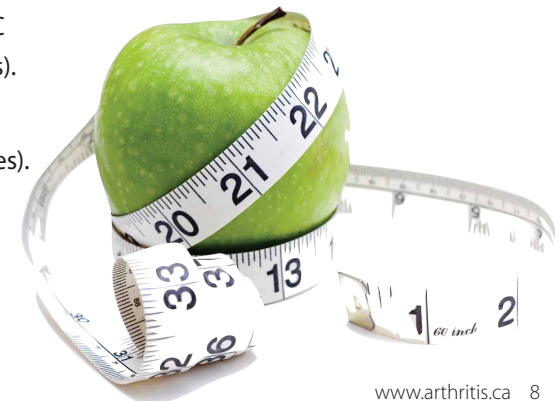


To increase your omega-3 fat intake, eat a minimum of two servings of fish per week.

The Canadian body weight classification system uses the body mass index (BMI) and the waist circumference (WC) to assess the risk of developing health problems associated with being overweight or underweight. The system is for use by adults age 18 years and over with the exception of pregnant and lactating women. Please note that the classification system may underestimate or overestimate health risks in certain adults, such as, highly muscular adults, adults who naturally have a lean body build, young adults who have not reached full growth, and adults over 65 years of age.

Waist Circumference (WC) determines the amount of body fat an individual is carrying around the core of their body, where it is most undesirable from a health risk perspective.

- Women should have a WC less than 88 cm (35 inches).
- Men should have a WC less than 102 cm (40 inches).



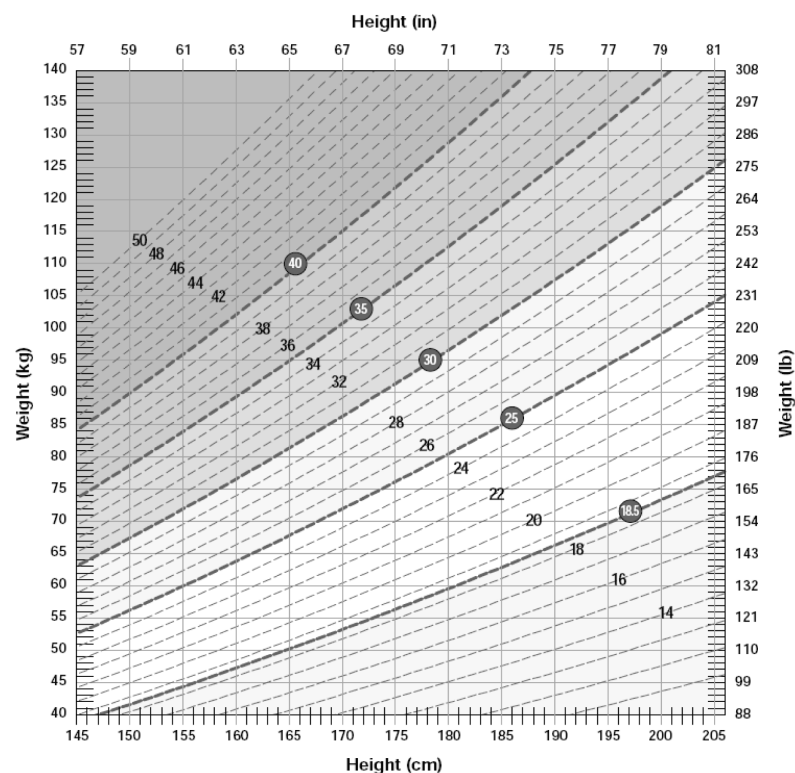


TABLE 1 How to find your Body Mass Index

Use straight lines to find the intersecting point between your weight (lb or kg) and your height (in or cm). The number on the dashed line where the lines intersect is your BMI. An ideal BMI for most people is 19–25.

Body Mass Index (BMI) is a ratio of weight-to-height. Research studies have shown that BMI can be classified into ranges associated with health risk. There are four categories of BMI ranges in the Canadian weight classification system. These are:

- underweight (BMI less than 18.5);
- normal weight (BMIs 18.5 to 24.9);
- overweight (BMIs 25 to 29.9), and
- obese (BMI 30 and over).

How can I eat healthy and maintain a healthy weight?

Dieting has become big business. There are many treatments and so-called miracle diets, which can be confusing. Unfortunately there is no miracle cure for arthritis. Crash and fad diets are usually unbalanced and are not recommended. Most people find they put the weight back on when they return to old eating habits. The only way to lose weight permanently is to make permanent changes to the way you eat and adjust the amount of exercise you do.

To work normally, your body needs food to supply energy and a variety of vitamins and minerals. If your diet contains more energy (calories) than you burn, your body will convert the extra energy to fat and you will gain weight. On the other hand, if your diet contains less energy than you are using, you will lose weight. You may have found that keeping active is not as easy as it once was because of your arthritis. There are ways to include activity in your routine without having negative effects on your arthritis. A physiotherapist or occupational therapist can assist you. If your activity level has decreased, it may mean that you need less energy and should eat fewer calories while still maintaining your intake of essential nutrients.

If you are going to eat fewer calories, it is important not to lose out on the vitamins, minerals and other key nutrients that are important for people with arthritis. Choosing nutrient-rich foods such as fruit and vegetables, whole grains, low fat dairy products and lean sources of protein will help maximize on the nutrients and minimize the extra calories.

We have listed four ways to cut down on excess calories to help achieve a healthy body weight.

1. Reduce fat intake

A healthy diet should include a small amount of unsaturated fats and limit the amount of saturated and trans fat. Most people eat more saturated fat than they actually need. Choosing the right amount and types of fats can lower your risk of developing arthritis, decrease inflammation and help you achieve and maintain a healthy body weight.

Cutting back on animal fats can reduce inflammation!

Here are some guidelines to help you consume less fat:

- Fill up on vegetables, fruits and whole grain bread and cereals that are naturally lower in fats.
- Eat fish and skinless poultry more often.
- Bake, broil and grill instead of frying foods.
- Pick low fat dairy products (e.g. skim, 1 or 2% milk, low fat yogurt, light cheese).
- Choose lean cuts of meat. Trim visible fat off before cooking.
- Use oils and soft-tub margarines sparingly.
- Check the labels of foods like cookies, chocolate, pastries and savoury snacks – this can help you reduce the amount of "hidden fats" you consume.

Unsaturated fats come from vegetable and plant sources. Some polyunsaturated fats like those from corn or sunflower sources are high in omega-6 fatty acids and although heart-healthy, can also increase general inflammation in the body. Omega-3 fatty acids as found in cold water fish and flaxseeds, can be helpful for inflammatory arthritis. Monounsaturated fats as found in olive and canola oils, are 'neutral' fats in this respect and do not contribute to inflammation.

Saturated fats should be limited as they may increase inflammation in the body. Saturated fats are mostly found in animal products (meat and dairy sources).

Trans fats are produced during the hydrogenation of vegetable fats in processed foods. They can be found mostly in foods like crackers, commercial pastries and cookies. Trans fats have even more negative health effects than saturated fats.

No matter the type of fat, all contain the same amount of calories and may contribute to excess energy in your diet. Including a small amount – 30 to 45 ml (2 to 3 Tbsp) – of unsaturated fats each day will provide the fat you need for good health. This amount includes oils used for cooking, salad dressings, soft tub margarines and mayonnaise. Other healthy fats are found in nuts, seeds and avocados. To learn more about fats please visit www.dietitians.ca



2. Reduce sugar intake

Sugar contains 'empty' calories and has no other food value so it can be cut back without losing any nutrients. There is little nutritional difference between white table sugar and brown sugar, honey, syrup, cane sugar, raw sugar or any other type of sugar – so beware.

Limit or avoid adding sugar to drinks and cereals. Although artificial sweeteners contain few calories, it is better to get used to food being less sweet. Dried fruit like raisins or dates can be used to sweeten cereals; unlike sugar and artificial sweeteners, they also provide vitamins, minerals and fibre.

3. Eat more vegetables and fruit

Vegetables and fruit should make up the largest component of your diet. Having at least one vegetable or fruit at every meal and as a snack will help you get the amount of vegetables and fruit you need each day. Besides being a great source of energy for your body, vegetables and fruit are a great way to boost your fibre intake which will help you with weight management. They are also loaded with antioxidants, which help boost the immune system and may help maintain healthy cartilage.



Antioxidants can be found in brightly coloured fruits and vegetables.

Things to consider when you are picking your vegetables and fruits:

- Eat at least one dark green (broccoli, romaine lettuce, and spinach) and one orange (carrots, sweet potatoes, and winter squash) vegetable each day.
- Choose vegetables and fruits prepared with little or no added fat, sugar or salt.
- Enjoy vegetables steamed, baked or stir-fried instead of deep fried.

Health Canada recommends that adults should eat at least seven servings of vegetables and fruits every day (see Table 2). This is to make sure that the body gets the vitamins, minerals and antioxidants it needs to maintain good health and to protect it from the stress of disease.

Choose fruits and vegetables of various colours especially the brightly coloured varieties as these tend to be rich in antioxidants. Examples include mangoes, oranges, cherries, blueberries, red peppers, spinach, tomatoes, avocado, sweet potato, beets and broccoli.

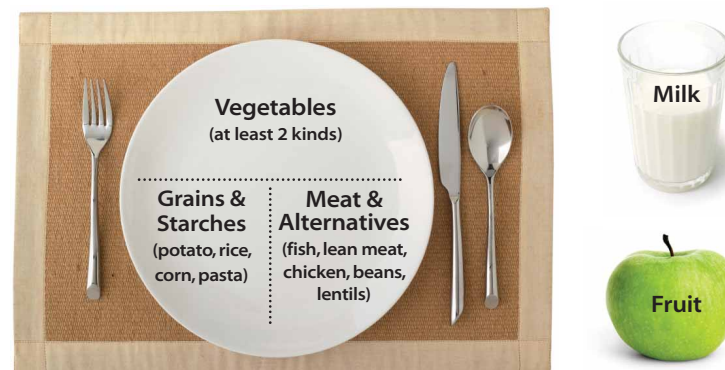
As well as being a great source of antioxidants, vegetables and fruits are a great way to get fibre, which in addition to whole grains are relatively filling and help achieve a healthy weight.

TABLE 2 What counts as one serving of vegetables and fruit?

1 medium fresh fruit or vegetable
1/2 cup frozen or cooked vegetables
1/2 cup frozen or canned fruit pieces
1/4 cup dried fruit
1 large carrot or celery stalk
1 cup raw, sliced fruit (grapes, melon) or vegetables (carrots, broccoli, mushrooms, cauliflower)
1 cup raw lettuce, spinach or other greens
1/2 cup cooked greens
1/2 cup (125 ml) fruit or vegetable juice

Source: Eating Well with Canada's Food Guide www.healthcanada.gc.ca/foodguide

Sample meal plan

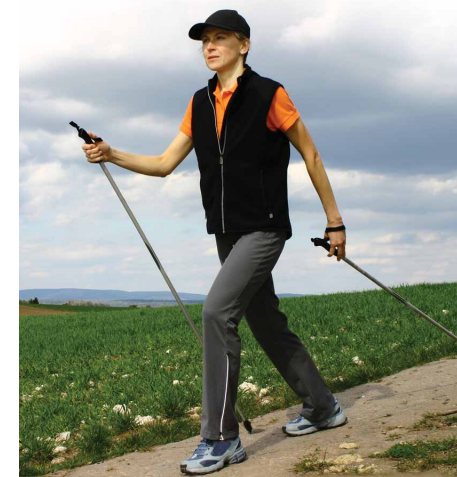


Source : Reprinted with permission from the Canadian Diabetes Association, 2008
(The Plate Method) from *Just the Basics: Healthy Eating for Diabetes Management and Prevention* ©

4. Increase your daily physical activity

Exercise is important. Not only does it use up calories which would otherwise end up as fat, but it also increases your strength and flexibility. Exercise is good for your general health, especially the heart and circulation. Of course, arthritis can make exercise difficult and painful, and the wrong kind of exercise can make it worse. But exercise does not have to mean running a marathon! A daily walk for half an hour with the dog, for example, or a walk to the local store or park is exercise and it will help. Many people find particular types of exercise suit them; swimming is a good exercise because being in water takes the weight off the joints. Others prefer fitness classes, such as tai chi, or cycling. The most important thing is to find activities you enjoy and to do them regularly. More information about activity is available on The Arthritis Society's website www.arthritis.ca/tips/exercise.

There are plenty of other resources to help you find activities that you enjoy. *Canada's Physical Activity Guide* (www.paguide.ca) is available for free and offers useful advice. Also visit www.participation.ca to learn about activities in your community.



Should certain foods be avoided?

Some people are allergic or intolerant to certain foods. This is highly individual, and varies from person to person. Finding out whether you really are sensitive to a particular food can be quite a difficult process and the risk of nutrient deficiency must be weighted against the benefit of removing the potentially intolerant food.

There is no evidence to suggest that arthritis is caused by a food allergy. If you are concerned about food allergies, you should discuss these concerns with your doctor and request a referral to an allergy specialist.

What about food allergies?

The subject of food allergies or intolerance and arthritis is very controversial. There are many books which recommend all sorts of elimination diets and claim miraculous results in arthritis. Some of these unproven diets would leave your body deficient of important vitamins and minerals if you followed them for a long time.

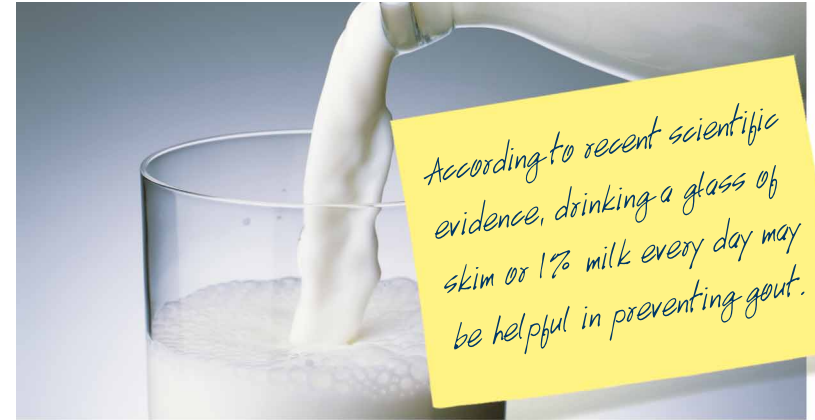
Tests which claim they can tell if you are allergic to foods, are mostly unreliable. Non-steroidal anti-inflammatory drugs (NSAIDs), which are commonly used for arthritis, increase the permeability of the gut, causing it to become 'leaky', allowing larger molecules of food to pass through than would normally be the case, causing food sensitivity. So if you and your doctor decide to reduce your NSAIDs, you may become less food-sensitive.

Fasting for rheumatoid arthritis

Fasting is **not recommended** for rheumatoid arthritis. Some research has shown that fasting for a week can improve inflammation, but once you return to your normal diet your inflammation returns. If you want to learn more about fasting you should speak with your doctor or Registered Dietitian.

Vegetarian diets for rheumatoid arthritis

Vegetarian diets have been shown to be helpful in the long term for some people with rheumatoid arthritis. This could be because of the reduction of certain types of saturated fat and the higher intakes of fruits, vegetables and whole grains in your diet that affect inflammation. If you would like to learn more about vegetarian diets *Eating Well with Canada's Food Guide*



can help you plan meals while ensuring you achieve your daily-recommended intake of nutrients. A Registered Dietitian can also help you with this transition.

Should I alter my diet if I have gout?

Gout is a very painful type of inflammatory arthritis that is caused by the crystallization of uric acid in the joints, causing inflammation.

Uric acid is produced from *purines*, which are chemicals that result from the natural death of cells. The build-up of uric acid is mostly due to the body not metabolizing it efficiently enough, often an inherited tendency.

Certain medical drugs such as diuretics (water tablets) used to treat heart disease or high blood pressure can also contribute to the risks of gout. Your doctor may alter your medications to avoid gout flares.

Many dietary and lifestyle factors can contribute to the development of gout. These include eating purine-rich foods such as red meat and seafood. Alcoholic drinks like beer can also lead to gout.

Gout is the only type of arthritis that can be substantially controlled by changing your diet and lifestyle. People who are overweight and / or obese have an increased risk of having gout; achieving a healthy weight can decrease the risk of gout.

Alcohol consumption plays a role in triggering gout flares because alcohol limits the clearing of uric acid from the kidneys. In addition, beer acts as a source of purines. The dehydrating effects of alcohol can also

TABLE 3 Purine Content of Foods

HIGHEST	Sardines, anchovies and herrings, kidneys, liver and sweetbreads, yeast, alcohol and beer
MODERATE	Shellfish and other seafood, red meat, poultry, and their broths, beans, peas and lentils, spinach, oatmeal, wheat germ and bran
LOW	Fruit and most vegetables, nuts and fats of all kinds, most breads, cereal and cereal products, milk, cheese, eggs, sugars, syrups, and sweets

limit the uric acid clearing from the kidneys; therefore staying hydrated can aid this process.

Eating purine-rich foods and drinking alcohol can trigger some individual's gout flares, if these are triggers to flaring your gout, it would be best to avoid them. Table 3 lists foods and their purine content.

Uric acid levels are not affected by so-called 'acidic food' like oranges or tomatoes so you can eat these safely.

Other Nutritional Concerns

Should I take extra calcium, vitamin D, or iron supplements?

Calcium is an essential basic nutrient that is important for healthy bones and the prevention of osteoporosis (brittle bones). Post-menopausal women and individuals with arthritis are at risk for developing osteoporosis. Lack of dietary calcium can also increase your risk of developing osteomalacia (soft bones). The recommended calcium intake goal for healthy adults (aged 19 - 50) is 1000 milligrams (mg) of calcium every day. Adults over the age of 50 should aim for an intake of 1200 mg daily.

The best sources of calcium are low-fat (skim, 1, 2%) milk, cheese and yogurt and certain types of fish which are eaten with the bones (i.e. canned salmon or sardines). Two servings of milk (500 ml or two cups) per day, together with a reasonable amount of other foods which contain calcium, should be sufficient to meet your needs (see Table 4).

It is worth knowing that skim, 1% and 2% milk have the same amount of calcium as homogenized milk but spare you the extra calories, cholesterol and saturated fats.

If you do not consume many milk or alternatives, you may need a calcium supplement. Discuss this with a Registered Dietitian or your doctor.

Vitamin D is needed for the body to absorb calcium and there is some evidence that arthritis (both osteoarthritis and inflammatory types) progresses faster in people who have low levels in their bodies. Vitamin D is produced by the body when skin is exposed to sunlight. Most Canadians don't get enough vitamin D from sunlight because of working indoors, wearing longer clothing and an increased use of sunscreen so it is important to get it from your diet or a vitamin supplement.

It is recommended that Canadians aged 19 to 50, receive 200 IU of vitamin D per day. Adults between 50 and 70 should have 400 IU and adults over 70, 600 IU.

Milk is the main source of dietary vitamin D. It is fortified with 100 IU per 250 ml glass. Foods such as margarine, eggs, chicken livers, salmon, sardines, herring, mackerel, swordfish and fish oils (halibut and cod liver oils) also contain vitamin D. Since it may be difficult to get enough vitamin D from food alone, you may wish to consider a vitamin D supplement. Most multivitamins provide 200-400 IU of vitamin D. Some calcium supplements also contain vitamin D. Adults over 50 may benefit from taking a supplement (e.g. vitamin D3) containing 400 IU of vitamin D all year round.



TABLE 4 Calcium Content of Some Common Foods

DAIRY SOURCES	PORTION	CALCIUM
Milk, 2%, 1%, skim, chocolate	1 cup/250ml	300 mg
Buttermilk	1 cup/250ml	285 mg
Cheese, Mozzarella	1 1/4"/3 cm cube	200 mg
Cheese, Cheddar, Edam, Gouda	1 1/4"/3 cm cube	245 mg
Yogurt, plain	3/4 cup/185 ml	295 mg
Milk, powder, dry	1/3 cup/75 ml	270 mg
Ice cream	1/2 cup/125 ml	80 mg
Cottage cheese, 2%, 1%	1/2 cup/125 ml	75 mg
NON-DAIRY SOURCES		
Sardines, with bones	1/2 can/55 g	200 mg
Salmon, with bones, canned	1/2 can/105 g	240 mg
Fortified rice or soy beverage	1 cup/250 ml	300 mg
Fortified orange juice	1 cup/250 ml	300 mg
Molasses, blackstrap	1 tbsp/15 ml	180 mg
Beans, baked	1/2 cup/125 ml	75 mg
Soybeans, cooked	1 cup/250 ml	170 mg
Tofu, with calcium sulfate	3 oz/84 g	130 mg
Bread, whole wheat	2 slices	40 mg
Broccoli, cooked	3/4 cup/185 ml	50 mg
Orange	1 medium	50 mg
Bok Choy	1/2 cup/125 ml	75 mg
Figs, dried	10	150 mg

Source: Calcium: An Essential Element for Bone Health www.osteoporosis.ca (click "about osteoporosis" select nutrition)



Iron

Many people with arthritis are anemic. The anemia can be due to different causes. 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 anemia. A common occurrence with inflammatory types of arthritis is anemia of chronic disease; this **does not** improve with iron supplements. If you are anemic your doctor can tell you if more iron is likely to help.

Besides iron supplements, the best source of iron that can be absorbed by your body is found in red meat and other animal products. This is called heme iron. If you have chosen to reduce your intake of red meat for heart health reasons, and to decrease inflammation, it is important that you ensure you obtain iron from other sources. Iron from fish is also easily absorbed. In fact, sardines contain almost as much iron as beef. Non-heme or plant based sources of iron are better absorbed if there is also vitamin C in the meal. Having citrus fruit or their juices or a green salad, red, yellow or orange bell peppers and tomatoes with your meal will enhance the absorption of iron. On the other hand, tea reduces the amount of iron which your body can absorb so it is a good idea not to drink tea with your meal. If you are vegetarian, it is important to get adequate non-heme sources of iron on a daily basis. Talk to a Registered Dietitian about meeting your individual iron requirements.

TABLE 5 Sources of Iron

HEME IRON	mg	NON-HEME IRON	mg
75 g cooked pork liver	13.4	1/4 c roasted pumpkin seeds	8.6
75 g cooked clams	21.0	3/4 c cooked soybeans	6.5
75 g canned sardines	2.2	3/4 c cooked lentils	4.9
75 g cooked chicken	0.4	2 tbsp wheatgerm	.91

Source: Canadian Nutrient Files, 2007b
<http://www.hc-sc.gc.ca/fn-an/nutrition/fiche-nutri-data/index-eng.php>

Are there any foods or food supplements which really do help arthritis?

Omega-3 polyunsaturated fatty acids

One of the most exciting, recent discoveries is that certain foods and food supplements really can help arthritis. The effects are fairly specific to different types of arthritis which is why it is important to know what type of arthritis you have been diagnosed with.

Omega-3 polyunsaturated fatty acids, particularly as found in cold water fish and the oil produced from them, can be helpful for inflammatory arthritis. (Which includes rheumatoid arthritis, reactive arthritis, psoriatic arthritis and ankylosing spondylitis; it also includes gout but cold water fish should generally be avoided if you have gout because of the high purine content).

What are fatty acids?

When the fats and oils we eat are broken down by the digestive system they break down into fatty acids. The nature of the fat or oil depends on the type of fatty acid (or fatty acids) it is made of. Some fatty acids can be made by the body from other compounds. But some *cannot* be made and the body and we **must get them from food**. These are called essential fatty acids (EFAs). Alpha-linoleic acid (ALA) and linoleic acid (LA) are essential fatty acids.



Polyunsaturated fatty acids are divided into two main groups:

- omega-3, found in high levels in cold water fish and some plant seed oils and nuts.
- omega-6, found mostly in plant seed oils such as sunflower oil.

The body uses both of these types of fatty acids to control inflammation in the body.

What is the difference between omega-3 and omega-6 polyunsaturated fatty acids?

Omega 3 and omega 6 fats are polyunsaturated fats. Both omega 3s and omega 6s are healthy fats. Research on the many health benefits of omega-3 fats is growing. Most North Americans do not eat enough omega-3 fats to enjoy the health benefits they offer. ALA is the most common omega-3 fat eaten by North Americans. The research suggests that DHA and EPA are the most important omega-3 fats for health. Refer to Table 6 for a list of foods with DHA and EPA and Table 7 for a list of foods with ALA.

If you have an inflammatory type of arthritis (other than gout) it is a good idea to eat cold water fish twice a week. Also, most pharmacies and health food stores sell fish oil capsules which contain high concentrations of EPA and DHA. If you are allergic to fish, it is possible to take supplements made from algae for DHA and EPA, or flax seed oil for ALA however, it is not certain if they are as beneficial as the omega-3 fatty acids found in fish oil.



In relation to osteoarthritis, studies have been carried out to try to find whether fish oils can be helpful for this condition but the results so far have not been conclusive and more research is needed on this subject.

Omega-6 polyunsaturated fatty acids are not thought to be of benefit in arthritis and in fact they can increase inflammation by competing in the metabolism with omega-3 polyunsaturated fatty acids. In Canada, most people have diets which already contain more omega 6 than is needed, so it may be helpful 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 margarine) as this can improve the ratio of omega 3s to omega 6s in your diet.

TABLE 6 Sources of Omega-3 Fats – DHA/EPA

100 g serving	g DHA/EPA	100 g serving	gDHA/EPA
Flounder/sole	.5	Mackerel	1.9
Salmon fillet	2.1	Canned tuna	.3
Shrimps	.3	Halibut	.5
Herring	2.0	Sea bass	.8
Sardines	1.0	Trout	.9

Source: <http://www.dhaomega3.org/index.php?category=overview&title=Dietary-Sources-of-Omega-3-Fatty-Acids>

TABLE 7 Sources of Omega-3 Fats – ALA

PER 30 G SERVING	g ALA	PER 30 G SERVING	g ALA
Flax seeds (whole)	6.8	Soybeans, dried	.5
Chia seeds	1.2	Wheat germ	.2
Soybeans, cooked	.6	English Walnuts (14 halves)	2.1
Flaxseed oil (1000mg)	.5	Canola oil (1 tsp/5 ml)	.4

Source: <http://www.dhaomega3.org/index.php?category=overview&title=Dietary-Sources-of-Omega-3-Fatty-Acids>

Simple steps to increase your intake of omega-3 fats

- Eat fish (such as salmon or rainbow trout) at least twice a week.
- Lightly top your salads and steamed vegetables with flaxseed oil (but do not cook with flaxseed oil as it becomes toxic when heated).
- Sprinkle ground flaxseeds or chopped walnuts on yogurt or cereal.
- Omega-3 fat supplements with tocopherol may also be considered in consultation with your doctor*.
- Snack on a small handful of walnuts.
- Use a soft, non-hydrogenated margarine made from canola oil for spreading, cooking and baking.
- Use cooking oils that are rich in ALA, such as canola and soy oil.
- Choose omega-3 eggs.

*Depending on the dose of omega-3 supplement, there may be potential interactions with other medications or possible undesirable side effects.

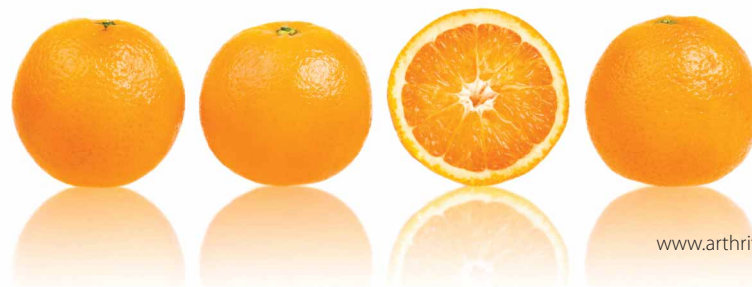
Caution with fish liver oils

It is important not to confuse fish oil with **fish liver oil** (cod liver oil and halibut liver oil are common examples). 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 is 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 too much vitamin A can harm the unborn baby.

Adults should not take, in total, more than 3000 micrograms (mcg) of vitamin A per day. This is known as the **Tolerable Upper Intake Level (UL)** for vitamin A, which means that if you repeatedly take more than this you risk doing yourself harm. Be careful if you eat a lot of liver because this usually contains a lot of vitamin A. If you want to take fish liver oil capsules, you should consult your healthcare professional. If you take fish liver oil, do not exceed the dose recommended on the label. If you want to increase your intake of omega-3 polyunsaturated fatty acids, you should do so by taking pure fish oil, not fish liver oil.

How many antioxidant-rich foods should I be eating?

Antioxidants may play a role in reducing inflammation in rheumatoid arthritis and decreasing the progression of cartilage breakdown in osteoarthritis. To maximize your intake of antioxidant rich foods, eat a minimum of seven servings of bright coloured vegetables and fruits daily and pick wholegrain breads and cereals where possible. The foods which are richest in antioxidants are fresh fruits and vegetables, especially brightly coloured varieties like cherries, blueberries, apples, oranges, avocado, peppers, spinach, tomatoes, sweet potatoes, beets and broccoli.





It is best to get the nutrients your body needs from foods before using supplements or pills.

Glucosamine sulphate and chondroitin for osteoarthritis

Many people with osteoarthritis try **glucosamine sulphate** and **chondroitin** tablets that they buy from health food stores and pharmacies. The reason behind their use is that joint cartilage normally contains glucosamine and chondroitin compounds and taking supplements of these natural ingredients may help improve the health of cartilage damaged by osteoarthritis. These products currently are not licensed for use as drugs for osteoarthritis because there is insufficient research to date to show that they are effective. Glucosamine sulphate and chondroitin in Canada are referred to as “natural health products” (supplements). Natural health products are regulated by the Natural Health Products Directorate, Health Canada. Manufacturers of these products have until 2010 to completely comply with regulations set forth by the directorate. To see if Health Canada has licensed your particular supplement (NHP) check the label. NHPs that have been licensed for sale in Canada will bear a DIN, NPN or DIN-HM on the label, followed by an eight-digit number (e.g. NPN12345678). The presence of a DIN, NPN or DIN-HM means that the product has been authorized for sale in Canada.

Vitamins and minerals for arthritis

A balanced diet using the minimum number of servings from each of the four food groups from Canada’s Food Guide will help to maintain an adequate level of vitamin and minerals for most people. Because

inflammatory arthritis and other medical conditions may alter your body’s absorption or metabolism of some vitamins and minerals, it may be beneficial to take a standard multivitamin/mineral supplement. If you are at all concerned about your vitamin intake, you should speak to your doctor, Registered Dietitian or pharmacist about taking additional vitamins or minerals.

Are there any foods or supplements that help arthritis?

Some people feel that cutting out ‘acidic fruit’ such as oranges, lemons and grapefruit helps arthritis. Others believe that vegetables from the so-called nightshade family (which includes several foods – potatoes, tomatoes, sweet and hot peppers and eggplants) are bad for arthritis. There is no scientific evidence that leaving out either of these groups of fruits and vegetables helps arthritis, and such diets may have the undesired effect of reducing the beneficial antioxidants in the diet.

Cider vinegar and honey is also sometimes recommended for arthritis. Again there is no scientific evidence that it is helpful.

MSM (methylsulphonylmethane) is a sulphur-containing substance which has been recommended for various health problems, including arthritis. More research on the long-term safety and effectiveness of this product is needed before it can be recommended.

CMO (cetylmyristoleate) is a waxy substance made from beef fat, which it is claimed can help arthritis. Again, there is little scientific evidence that it does so. More research on the safety and effectiveness of this product is needed before it can be recommended.

What if I am losing weight unintentionally?

People with rheumatoid arthritis may lose their appetite (due to the disease process or as a side effect of medications). If unwanted weight loss occurs, eat small frequent, nutrient-dense meals (or snacks) throughout the day to help achieve the nutrition needed in order to prevent further weight loss. This strategy will help provide the nutrients that your body needs without using hunger or appetite as a cue to eat.

Can healthy eating help if I am taking medication?

Yes. A healthy diet still helps even if you are taking medication for your arthritis. In fact, there is even more reason to eat a good diet as it can help to protect the body against some of the side-effects of drugs and to avoid potential drug-nutrient interactions. Many arthritis medications have an anti-nutrient effect that can create problems with digestion or absorption of various nutrients from the foods that are eaten.

Ask your pharmacist about any possible interactions between your medications and your diet. Some of the changes recommended – achieving a healthy weight, eating a balanced diet, perhaps excluding some foods or nutrients, and increasing others, can possibly help to reduce the amount of medication you need. Speak to your doctor before reducing any amount of prescribed medication.

What are the important points to remember about my diet?

There are many organizations which support research into the links between what you eat and your arthritis. From the research evidence so far, it is recommended that you:

- Avoid fad diets or 'too good to be true' diets.
- Try to lose weight if you are overweight, by improving your eating habits and increasing physical activity whenever possible.
- Limit the amount of 'empty calories' from sugar, fat and alcohol in your diet.
- Eat more fruit and vegetables, especially brightly coloured varieties.
- Consume adequate dietary calcium and vitamin D from diet and supplements.
- Include cold-water fish in your diet twice per week.

If you think you are allergic, or intolerant or sensitive to different foods it is important to speak with your doctor or dietitian before altering your diet drastically. If a suspected food is a major part of your diet, or if you think you might be sensitive to several foods, it is advisable to seek professional help from a Registered Dietitian before starting an elimination diet.

Glossary

Anemia – a shortage of hemoglobin (oxygen-carrying pigment) in the blood resulting in a decrease in the ability of the blood to carry oxygen.

Antioxidants – substances which can neutralize free radicals (more accurately oxygen free radicals). The body produces its own antioxidants but it is thought that antioxidants in the diet (such as vitamin C) help destroy excess free radicals which may cause tissue damage or disease.

NSAIDs – non-steroidal anti-inflammatory drugs. A large family of drugs, prescribed for different kinds of arthritis which reduce inflammation and control pain, swelling and stiffness.

Purines – nitrogen-containing compounds, found mostly in nucleic acids – DNA and RNA. The body breaks purines down to uric acid.

Further reading

'Food Allergies and Food Intolerance: The Complete Guide to their Identification and Treatment.' J. Brostoff and L. Gamlin, Inner Traditions Bear & Company, Vermont USA, 2000. ISBN 9780892818754, 480 pages.

'Nutrition and Arthritis.' Dr. M. Rayman and A. Callaghan, Blackwell Publishing, 2006. ISBN 9781405124188, 280 pages.

These books are available from libraries, bookstores and online.

Useful Canadian Resources

Dietitians of Canada – professional organization of Canadian Registered Dietitians, 480 University Avenue, Suite 604, Toronto, Ontario, Canada, M5G 1V2, Telephone 416.596.0857, Facsimile 416.596.0603
www.dietitians.ca

Eat Well, Live Well – consumers can assess their food choices, based on Canada's Food Guide, through the interactive tool *EATracker*. It provides personalized feedback on the total intake of energy and essential nutrients and compares this to what is recommended for age, gender and activity level. Consumers can create a one-day menu with *Let's Make a Meal!* and analyze their favourite recipes with the *Recipe Analyzer*.
www.dietitians.ca/eatwell

Health Canada's Eating Well with Canada's Food Guide (with translations in French, Arabic, Chinese, Farsi, Spanish, Urdu, Tamil, Korean, Punjabi, Russian, and Tagalog)
www.healthcanada.gc.ca/foodguide

Health Canada's Physical Activity Guide for Healthy Living
www.paguide.com

My Food Guide – create your personalized copy of Canada's Food Guide
www.myfoodguide.ca

Osteoporosis Canada
www.osteoporosis.ca

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- The Consumer's Guide to Arthritis Medications



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