

NUTRITION

for active women

***BASIC DIETARY PRINCIPLES
ARE SIMILAR FOR BOTH
SEXES, BUT WOMEN HAVE
INCREASED REQUIREMENTS
FOR CERTAIN NUTRIENTS
ESPECIALLY IF THEY
PARTICIPATE ACTIVELY IN
SPORT OR EXERCISE***

There are a number of relevant nutrition issues facing today's active woman:

- Achieving the ideal body weight and composition for optimal performance
- Adequately fuelling the body to meet increased energy demands
- Meeting increased nutritional needs

A nutritious and balanced diet is the key to achieving these goals.

ACHIEVING THE 'IDEAL' BODY FOR YOUR ACTIVITY

Some sports (such as weight categorised sports) require the female athlete to achieve a specific body weight while other sports encourage a certain body composition or degree of leanness for optimal performance. This can lead to the active woman aspiring to a weight or body composition that is unrealistic for them. Active women need to be careful not to become too lean and should be aware of the consequences of maintaining a body weight or body fat level that is too low. This includes effects on health such as compromised immune function, impaired menstrual function and the subsequent effect on bone health and reduced cushioning and protection for internal body organs, as well as potential psychological effects.

It is important that the active woman does not allow body weight/composition goals to impact negatively on their diet. This may be detrimental to their health and put them at greater risk of not meeting their nutritional needs.

A sports dietitian can support and guide the active woman to help them attain and/or maintain an ideal body weight or composition for them.

MEETING ENERGY NEEDS

The active woman has increased energy requirements to meet the extra demands of their training or exercise program. Inadequate energy intake will result in fatigue and poor performance and possible inadequate nutrient intakes. It may also disrupt the reproductive cycle, resulting in amenorrhea (absence of menstrual cycles) which can negatively impact bone health and in extreme cases cause osteoporosis.

Increased energy needs can easily be met through food. The best source of energy for exercise comes from carbohydrate rich foods. These include breads, breakfast cereals, rice, pasta and other grains, fruit, starchy vegetables and legumes, and should form the basis of the diet for the active woman.



**EXCESS DIETARY
PROTEIN AND SALT
REDUCE THE BODY'S
RETENTION OF CALCIUM**



The desire for leanness and the growing popularity of low or no carbohydrate diets can result in some women avoiding these foods or limiting their intake. Active women need to realise that their requirements are different to that of the average woman and their muscles require this essential fuel to perform optimally. An inadequate intake of carbohydrate will result in poor concentration, lethargy and fatigue.

The actual amount of carbohydrate required per day is dependant on several factors, including the amount and intensity of training and other activities as well as body weight. If active women are concerned about meeting their needs, a sports dietitian can help to plan a personal training diet.

MEETING NUTRIENT NEEDS

Basic dietary principles are similar for both sexes, but women have increased requirements for certain nutrients especially if they participate actively in sport or exercise.

CALCIUM

Calcium is a mineral that plays an essential role in growth, muscle contraction and transmission of nerve impulses. It is extremely important for the development of strong bones, so it is essential that all active women have adequate amounts in their diet.

DO I EAT ENOUGH CALCIUM?

The table below shows daily calcium needs at different life cycle stages. Experts recommend that athletic women with an irregular or absent menstrual cycle should consume 1000-1500mg of calcium daily.

The following foods provide approximately 300mg of calcium:

- ▶ 200ml low fat/skim fortified milk
- ▶ 200g(1 tub) yoghurt
- ▶ 40g hard cheese
- ▶ 80g sardines/salmon (with bones)
- ▶ 2.5 cups baked beans
- ▶ 250g tofu

It is not necessary to take calcium supplements if the daily requirement is met from dietary sources.

RECOMMENDED DIETARY INTAKES (RDI'S) FOR CALCIUM:

Girls 9-13 years	1000-1300mg per day
Girls 14-18 years	1300mg per day
Women 19-50 years	1000mg per day
Post-menopausal women	1300mg per day
Pregnant/lactating women	1000mg per day

for active women

Most vegetarian women can meet calcium requirements through a regular consumption of low fat dairy foods, however vegans risk inadequate intake.

Alternative calcium sources include fortified soy drinks, tofu, nuts and seeds and dark green vegetables, although the calcium content of these foods can sometimes be lower and careful planning is necessary to meet daily needs.

CAN CALCIUM NEEDS BE MET WITHOUT FAT?

Yes. Low or reduced fat dairy products are excellent sources of calcium, especially for those watching their weight or fat intake. Some reduced fat dairy products are fortified with extra calcium (eg. 250ml low fat 'fortified' milk has 400mg calcium, compared with 300mg in the same amount of plain milk). Active women concerned about the fat content of milk need not worry, with recent research showing benefits of dairy products for weight control.

WHAT ABOUT LACTOSE INTOLERANCE?

Soy drink (calcium enriched) is the easiest way to obtain calcium if you have an intolerance to lactose found in dairy products. 250ml of fortified soy drink contains 300mg of calcium. Most people with lactose intolerance can cope quite well with small amounts of milk at a time, and yoghurt is an excellent source of calcium that is often tolerated well by those who cannot tolerate milk.

IS CALCIUM ABSORPTION AFFECTED BY ANY OTHER FOODS?

Yes. Calcium absorption is reduced by excessive caffeine, unprocessed bran, oxalate (found in spinach and rhubarb) and alcohol. The lactose in dairy products however improves absorption. Excess dietary protein and salt reduce the body's retention of calcium.

IRON

Iron is an essential constituent of haemoglobin and plays a vital role in energy production. As haemoglobin is the carrier of oxygen in the blood, it is essential for all athletes involved in aerobic activities to have adequate amounts of iron in their diet. Foods which provide 2mg of iron include:

- ▶ 50g lean beef
- ▶ 250g chicken (approximately 1.5 chicken breasts)
- ▶ 20g liver
- ▶ 1/2 cup spinach

WHAT ARE THE BEST SOURCES OF IRON?

Iron is found in the diet in two main forms:

HAEM IRON is found in foods such as red meat, poultry and seafood. Liver and kidney are the richest sources. It is well absorbed by the body.

NON-HAEM IRON is found in plant foods such as wholegrain and fortified breakfast cereals, rice, pasta, bread, green leafy vegetables, dried fruit, legumes and tofu. Non-haem iron is not absorbed as efficiently by the body as haem-iron.

Vitamin C and haem iron enhance the absorption of non-haem iron. Conversely, tannins (tea), caffeine (coffee, cola beverages and chocolate) and excess fibre reduce absorption. If insufficient iron is obtained from food, iron deficiency anaemia may occur.

THE RECOMMENDED DIETARY INTAKES (RDI'S) FOR IRON AT VARIOUS LIFE CYCLE STAGES:

Girls 9-13 years	8 mg per day
Girls 14-18 years	15 mg per day
Women 19-50 years	18 mg per day
Post-menopausal women	8 mg per day
Pregnant women	27 mg per day

Active women may require even higher amounts of iron than these RDI's.

HOW DO I KNOW IF I HAVE IRON DEFICIENCY?

A blood test which measures blood iron levels (haemoglobin) and body iron stores (ferritin) is needed to diagnose iron deficiency anaemia.

Fatigue and decreased athletic performance have been associated with the early stages of anaemia (low ferritin level). As anaemia develops, symptoms become more severe and may include dizziness, shortness of breath and impaired immune function.

Active women who are vegetarian or reduce their intake of red meat are most at risk of becoming anaemic.

DOES EXERCISE INCREASE IRON REQUIREMENT?

Women are more at risk of developing anaemia than men due to iron lost via the menstrual cycle. Strenuous exercise may contribute to this risk by increasing iron loss (through increased destruction of blood cells, and increased losses in sweat, faeces and urine) and perhaps by reducing iron absorption. Dieting may also result in an inadequate iron intake.

HOW IS IRON DEFICIENCY ANAEMIA TREATED?

Iron supplements (taken only under medical or dietetic supervision) and an iron rich diet is used to treat anaemia. When iron levels are restored, an iron rich diet is usually sufficient to prevent a future occurrence of anaemia. Women participating in heavy training schedules should have their iron levels checked regularly (3-4 times a year), especially those who are vegetarian or dieting.



VEGETARIANISM FOR ACTIVE WOMEN

There are a number of factors which may motivate an active woman to choose a vegetarian diet including social, ethical, religious or health based reasons. Some women may choose to become vegetarian in the mistaken belief that it will enhance their athletic performance.

WHAT IS A VEGETARIAN DIET?

Previously, vegetarianism could be quite simply defined however in recent years the terminology has been extended to include a number of different practices. Vegetarians may be classified under four categories:

- ▶ Vegan - All vegetable diet which excludes all animal foods, milk products and eggs.
- ▶ Lacto Vegetarian - All vegetable diet with milk and milk products.
- ▶ Lacto-Ovo Vegetarian - All vegetable diet which includes milk, milk products and eggs.
- ▶ New Vegetarian - Vegetable based diet which includes milk, milk products and eggs but only occasional use of other animal foods such as poultry and fish.

WHAT ARE THE NUTRITIONAL PRIORITIES FOR VEGETARIAN ACTIVE WOMEN?

If not planned correctly a vegetarian diet may be detrimental to both performance and health.

Important considerations for the vegetarian active woman include:

Energy

The results from research show that vegetarian athletes typically have low kilojoule (calorie) intakes. A vegetarian diet often includes a large intake of high fibre, bulky foods such as wholegrain cereals, vegetables, fruit and legumes which are low in kilojoules, yet nutrient dense. Some active women may have difficulty meeting their energy requirements for training and competition on a vegetarian regimen. For these women, it is important to plan frequent meals and snacks to avoid discomfort from overfilling at large meals, and to optimise the use of foods such as nuts and seeds, dried fruit, rice and pasta, and dairy products for the lacto and lacto-ovo vegetarians.

Protein

Meeting protein requirements on a vegetarian regimen takes careful planning and food selection. Active women have increased protein needs over their sedentary counterparts. These increased protein needs are easily met on a non vegetarian diet, however, the exclusion of meat and other animal foods can make this more difficult.

Animal products contain high quality protein with all the essential amino acids required by the body whereas most plant sources of protein have lower quality proteins which are deficient in one or more of these necessary protein building blocks. Lacto and lacto-ovo vegetarians can meet protein needs by regular inclusion of low fat dairy products and by eating

a variety of plant foods to obtain all the essential amino acids. Major sources of protein for the vegetarian active woman includes legumes, nuts, seeds, soy products, wholegrain cereals, eggs and dairy products.

Vitamins

Foods such as cereals, grains, nuts, seeds, fruit, vegetables and legumes are rich in many essential vitamins such as the B-Group vitamins, vitamin C and folate, necessary for optimal athletic performance. Vitamin B12 however, is not found in significant amounts in plant foods and vegan athletes must take care to choose some vitamin B12 fortified foods (eg. some soy products) or use vitamin supplements. Adequate B12 can be obtained by lacto or lacto-ovo vegetarians through the use of dairy products and eggs.

Minerals

The body's ability to efficiently absorb a number of minerals may be altered by the special characteristics of vegetarian diets, including a high intake of phytates, oxalates, and uronic acid (components of wholegrain foods and green, leafy vegetables). Iron and calcium are two minerals of prime concern in any active woman's diet. Zinc is another mineral that may potentially be deficient in the vegetarian active woman's diet.

The best sources of zinc include meat and seafood, however vegetarians can meet needs through increased consumption of legumes, wholegrain cereals and nuts.

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**ALL ACTIVE WOMEN
SHOULD PAY SPECIAL
ATTENTION TO INCLUDING
CALCIUM AND IRON RICH
FOODS IN THEIR DIET**



This fact sheet is an initiative of the Department of Planning and Community Development (Sport and Recreation Victoria) through Women in Sport funding and has been prepared with the contribution of the Medicine and Science for Women in Sport group of Sports Medicine Australia

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CONCLUSION

For most active women selecting a wide variety of foods from each of the five major food groups as per the Healthy Eating Pyramid below will ensure consumption of adequate quantities of all essential nutrients. The active woman needs to ensure an adequate carbohydrate intake to provide sufficient energy to working muscles. There is no evidence that additional vitamins and minerals will improve performance. Vegetarian active women need to put effort into planning, experimentation and creativity in order to meet all of their daily nutrient requirements. Many would benefit from the individual advice of a sports dietitian.

All active women should pay special attention to including calcium and iron rich foods in their diet.

Further Information

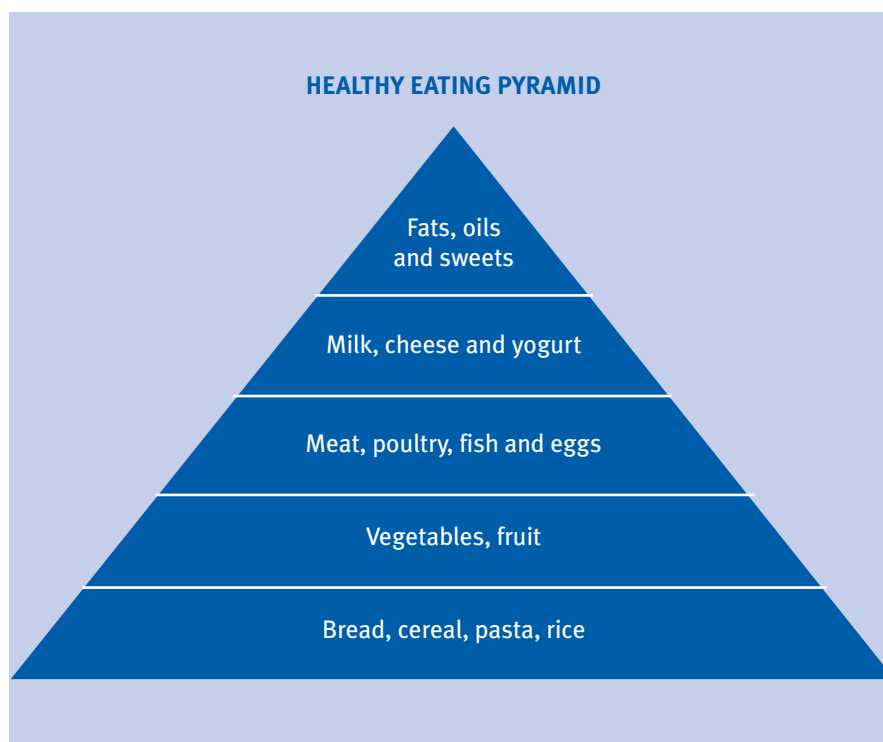
Sports Medicine Australia
www.sma.org.au

Dietitians Association of Australia
www.daa.asn.au

Sports Dietitians Australia
www.sportsdietitians.com.au

Other useful resources include:

- Food for health, dietary guidelines for Australians, A guide to healthy eating



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