Eating and Activity Guidelines

for New Zealand Adults

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MINISTRY OF HEALTH
MANATŪ HAUORA

Foreword

One of the key roles of the Chief Medical Officer is to provide clear, consistent, evidence-based policy advice to the Government, the health sector, and the public. The advice needs to address the issues of the day and be supported by the latest research evidence and expert opinion.

Obesity and non-communicable diseases such as heart disease, diabetes and cancer affect the health of many New Zealand adults. However, simple lifestyle changes such as eating more healthily, reducing time spent sitting and increasing physical activity can help to reduce the risk of developing these diseases or help to manage them better.

The Ministry of Health is releasing the *Eating and Activity Guidelines for New Zealand Adults* (aged 19–64 years) to support the work of health practitioners and others who provide nutrition and physical activity advice to the public.

This document contains population health advice for all New Zealand adults centred around key messages or statements (the Statements) on nutrition and physical activity. The Statements are our interpretation of the key international evidence for the New Zealand context. We encourage health practitioners and others to use this information as the basis for helping New Zealand adults and their whānau to eat well, be regularly physically active, and attain and maintain a healthy weight. Accompanying health education resources for the public will also be available.

The *Eating and Activity Guidelines for New Zealand Adults* is the first in a new series that over time will provide comprehensive advice on nutrition, physical activity and obesity prevention for all New Zealanders. Future editions of this document will include key advice for pregnant and breastfeeding women; infants and toddlers; children and young people; and older people. The series will also include papers with in-depth information on topical issues beyond those covered in this Guidelines document.

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Chief Medical Officer

Clinical Leadership, Protection and Regulation Business Unit

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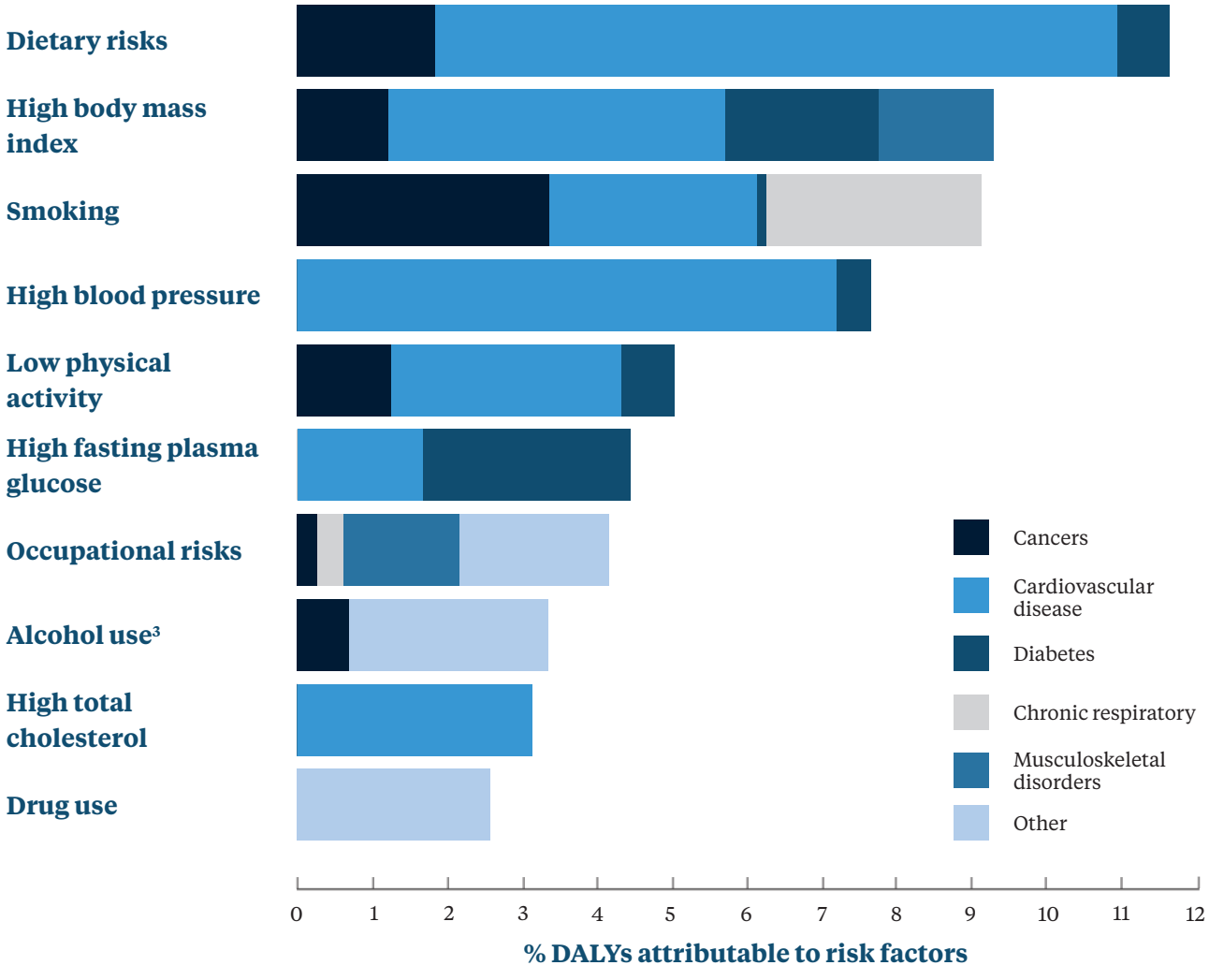
Introduction

Diet, excess weight and physical inactivity are three of the top five risk factors contributing to 'health loss'[1] in New Zealand (Figure 1).

Together they account for 15–20 percent of health loss from all causes, mostly through their contribution to cardiovascular disease, cancers, diabetes and musculoskeletal disorders. Emotional, spiritual, family and whānau health are also significant facets of wellbeing. Eating well and being regularly physically active are essential for the overall health and wellbeing of all New Zealanders and reducing health loss.

Figure 1: Major causes[2] of health loss in New Zealand 2010 (as % total DALYs)



Source: IHME 2013. DALY = disability adjusted life year
Notes: The percentage of health loss is correct for each cause separately, but the separate percentages cannot be added across causes.

1 Health loss is a measure of how much healthy life is lost due to early death, illness or disability. Health loss is measured in 'disability-adjusted life years, (DALYs).
2 Includes risk factors contributing 1% or more or health loss
3 The diagram does not include the small protective effect (about 0.5%) of alcohol consumption on cardiovascular disease and diabetes.

The *Eating and Activity Guidelines for New Zealand Adults*

This document is the first of the Eating and Activity Guidelines (EAG) Series. It is written for health practitioners and others who provide health advice on nutrition and physical activity for New Zealand adults.

This document:

1 brings together the updated eating and physical activity statements (the Statements) for New Zealand adults, outlining each Statement and why it is recommended

2 identifies the international evidence that underpins the Statements

3 provides some information for putting the Statements into practice.

The Statements provide evidence-based, population health guidance on eating well and being physically active. This includes meeting key nutrient needs, maintaining a healthy body weight and decreasing the risk of diseases like cardiovascular disease and cancer. The Statements do not replace advice from health practitioners and physical activity specialists to an individual patient or client, which takes into account the health and/or other issues relevant to that person.

Information for the public on putting the Statements into practice can be obtained by downloading or ordering the accompanying health education resources at: www.healthed.govt.nz

Future editions of this document will contain additional Statements relevant to specific population groups such as pregnant and breastfeeding women, infants and toddlers, children, young people and older people.

In general, the scientific evidence that underpins the Statements focuses on foods, nutrients, dietary patterns and activity. It does not take into account the broader aspects of eating and activity (such as its social, emotional, spiritual, mental, environmental or economic context). Later documents in the EAG Series will consider some of the broader context of food and activity.

Most of the evidence comes from research on European and North American populations and a 'western' style of diet. However, it is easy to adapt these Statements to fit a range of suitable dietary patterns when giving advice to members of a particular ethnic group in New Zealand's increasingly multicultural population.

How was this document developed?

Following an independent evaluation of the Food and Nutrition Guidelines Series in 2011, the Ministry of Health developed a new model for providing population health advice on nutrition and physical activity to the health sector.

The *Eating and Activity Guidelines for New Zealand Adults* is the central document of the EAG Series. For an overview of how this document was developed, see Appendix 1. For further detail, go to the Ministry of Health's website: www.health.govt.nz/eatingactivityguidelines

The evidence that underpins the Statements

The Statements are based on various international evidence reviews, reports and guidelines as shown in Table 1. These particular evidence reviews and reports were chosen based on discussion between the Ministry of Health and the EAG Technical Advisory Group of experts in nutrition and physical activity.

Table 1: Summary of the evidence reviews that underpin the Statements

EAG statement	Sources of evidence
Eating Statements 1, 2 and 3	Evidence reviews that underpin the following Guidelines and reports: • 2010 American Dietary Guidelines (US Department of Agriculture and US Department of Health and Human Services 2010) • 2012 Nordic Nutrition Review (Nordic Council of Ministers 2014) • 2013 Australian Dietary Guidelines (NHMRC 2013) • A Series of Systematic Reviews on the Relationship between Dietary Patterns and Health Outcomes 2014 (US Department of Agriculture 2014) World Cancer Research Fund Report (WCRF and AICR 2007) and Continuous Update Report (WCRF and AICR 2011) World Health Organization (WHO) reports: • Diet, Nutrition and the Prevention of Chronic Disease (WHO 2003) • Guideline: Sodium intake for adults and children (WHO 2012a) • NCD Global Action Plan (WHO 2013) • Guideline: Sugars intake for adults and children (WHO 2015a) • Nutrient Reference Values for Australia and New Zealand including Recommended Dietary Intakes (NHMRC 2006)
Eating Statement 4 (Alcohol)	• Australian Guidelines to Reduce Health Risks from Drinking Alcohol (NHMRC 2009a) • Alcohol and Health in Canada: A summary of evidence and guidelines for low-risk drinking (Butt et al 2011).
Eating Statement 5 (Food Safety)	Evidence to support this statement comes from a range of peer reviewed scientific literature and reports as described in Eating Statement 5.
Body Weight Statement	Evidence as for Eating Statements 1, 2 and 3 • Clinical Guidelines for Weight Management in New Zealand Adults (Ministry of Health 2009)
Activity Statements	• Australia's Development of Evidence-based Physical Activity Recommendations for Adults (18-64 years) (Brown et al 2012) • World Cancer Research Fund Report (WCRF and AICR 2007)

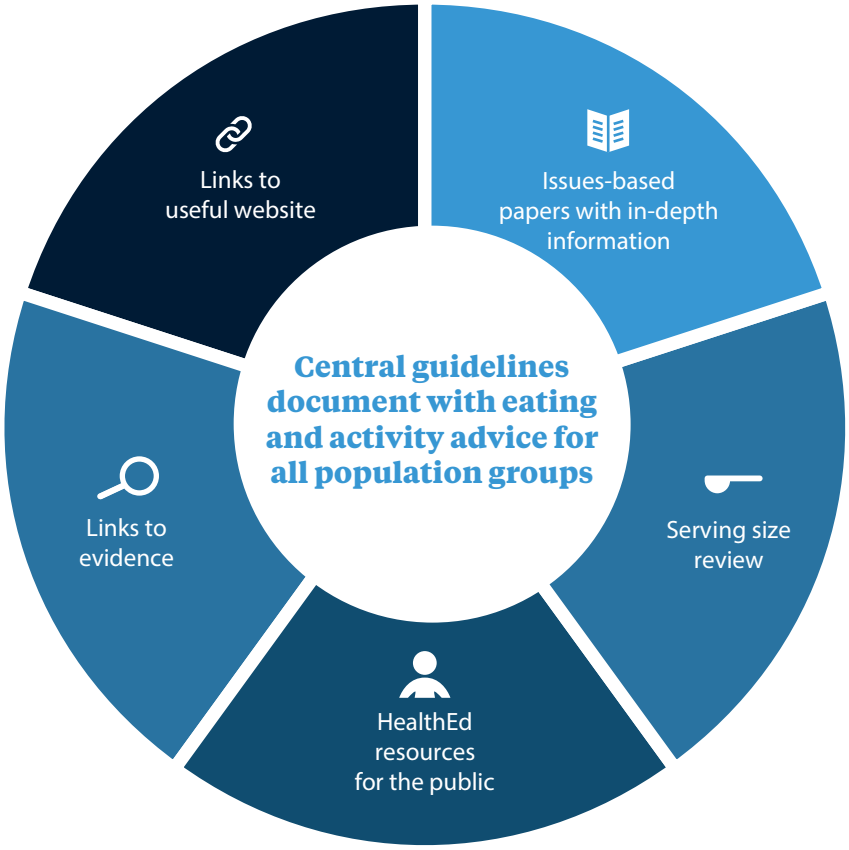
More detail on the evidence base for the Statements can be found in The Eating and Body Weight Statements section, The Activity Statements section and Appendix 2 of this document, as well as on the Ministry of Health website: www.health.govt.nz/eatingactivityguidelines

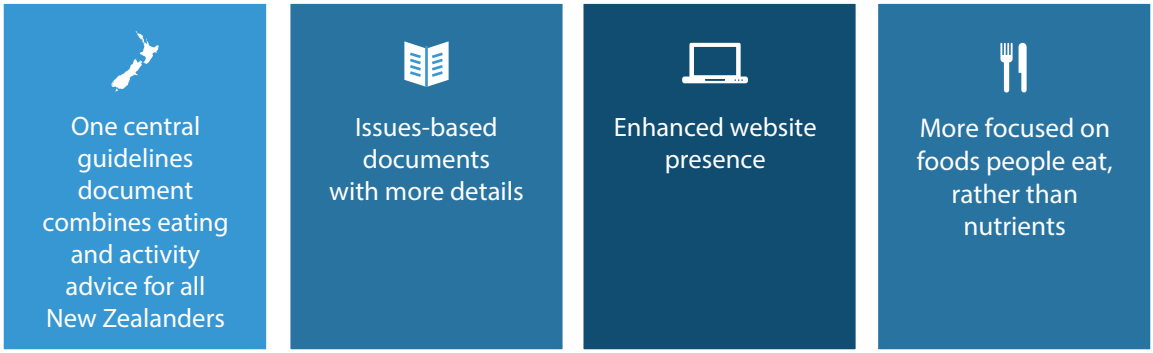
The Eating and Activity Guidelines (EAG) Series

Over time the EAG Series will replace the existing Food and Nutrition Guidelines Series and physical activity guidelines.

Figure 2 outlines the different parts of the EAG Series. This document is the central document, which provides the Eating and Activity Guidelines Statements. Currently the Statements are for adults, but eventually they will be for all New Zealanders. For more detail about the EAG Series, go to the Ministry of Health website: www.health.govt.nz/eatingactivityguidelines

Figure 2: Key features of the Eating and Activity Guidelines Series





Current nutrient intake and physical activity levels for New Zealand adults

New Zealanders consume too much saturated fat and sodium and not enough dietary fibre (University of Otago and Ministry of Health 2011, Ministry for Primary Industries 2013). The growing rates of obesity show that many New Zealand adults consume more energy (kilojoules[4]) than they use.

While most New Zealand adults have adequate intakes of vitamins and minerals, there are some exceptions. The 2009 New Zealand Total Diet Study (Vannoort and Thomson 2011) found that estimated average intakes of dietary iodine were lower than required, which was confirmed by the iodine status data from the 2008/09 New Zealand Adult Nutrition Survey (for more on iodine, see 'What is iodised salt?' information box in Eating Statement 2). Dietary intakes of some other nutrients such as selenium and calcium were also lower than recommended, but it is not clear whether this harms people's health. The Ministry of Health continues to monitor this situation. Specific groups within the population may not be getting enough of certain nutrients. For example, young women may not be getting enough iron.

Combined dietary risks, such as low vegetable and fruit intake and high salt intake, contributed around 11 percent of the total health loss in New Zealand in 2010. High body mass index (BMI) contributed around 9 percent (IHME 2013).

Fifty-one percent of New Zealand adults were physically active, defined as doing at least 30 minutes of moderate-intensity activity on five days each week (Ministry of Health 2014a). Walking, gardening, swimming and cycling are the most common activities (Sport New Zealand 2015). Low physical activity accounted for nearly 5 percent of the total loss of health for New Zealand adults (IHME 2013).

For more information on eating and activity practices of New Zealand adults, see the discussion under each Statement.

4 The Ministry of Health measures energy using metric units of kilojoules. Energy has previously been measured in kilocalories (commonly called calories). 1 kilocalorie = 4.2 kilojoules (kj).

Eating and Activity Guidelines Statements for New Zealand Adults

Making good choices about what and how much you eat and drink and being physically active are important for good health.

Eating Statements

1 Enjoy a variety of nutritious foods every day including:

plenty of vegetables and fruit

grain foods, mostly whole grain and those naturally high in fibre

some milk and milk products, mostly low and reduced fat

some legumes*, nuts, seeds, fish and other seafood, eggs, poultry (eg, chicken) and/or red meat with the fat removed.

* Legumes include lentils, split peas, chickpeas and cooked dried beans (eg, kidney beans, baked beans).

2 Choose and/or prepare foods and drinks:

with unsaturated fats (canola, olive, rice bran or vegetable oil, or margarine) instead of saturated fats (butter, cream, lard, dripping, coconut oil)

that are low in salt (sodium); if using salt, choose iodised salt

with little or no added sugar

that are mostly 'whole' and less processed.

3 Make plain water your first choice over other drinks.

4 **If you drink alcohol, keep your intake low. Stop drinking alcohol if you could be pregnant, are pregnant or are trying to get pregnant.**

5 **Buy or gather, prepare, cook and store food in ways that keep it safe to eat.**

Activity Statements

1 **Sit less, move more! Break up long periods of sitting.**

2 **Do at least 2½ hours of moderate or 1¼ hours of vigorous physical activity spread throughout the week.**

3 **For extra health benefits, aim for 5 hours of moderate or 2½ hours of vigorous physical activity spread throughout the week.**

4 **Do muscle strengthening activities on at least two days each week.**

5 **Doing some physical activity is better than doing none.**

Body Weight Statement

Making good choices about what you eat and drink and being physically active are also important to achieve and maintain a healthy body weight.

Being a healthy weight:

- helps you to stay active and well
- reduces your risk of developing type 2 diabetes, heart disease and some cancers.

If you are struggling to maintain a healthy weight, see your doctor and/or your community health care provider.

Recommended dietary and physical activity changes for New Zealand adults

Based on the evidence considered and the resulting Eating and Activity Statements in this document, a number of changes are recommended[5] to the eating and activity practices of New Zealand adults. These changes are summarised in the following tables.

Table 2: Recommended dietary changes for New Zealand adults

Limit	Increase
Processed meat	Vegetables and fruit
Red meat*	Legumes
Drinks and foods with added sugar	Fish and other seafood
Highly processed foods that are high in refined grains, saturated fat, sugar and salt	Nuts and seeds
	Whole and less processed foods

* Eat less than 500 g cooked meat per week (equivalent to 700-750 g when raw).

Exchange		For
Refined grains	→	Whole grains and high fibre
Butter	→	Unsaturated vegetable oils and oil based spreads
Higher-fat milk products	→	Low-fat milk products
Sugar sweetened beverages	→	Water, low-fat milk, diet drinks

5 These recommended changes are based on average and common food consumption and physical activity data. Some New Zealanders may be already meeting some or all of the recommended intake and activity levels.

Table 3: Recommended activity changes for New Zealand adults

Limit	Increase
Prolonged sitting Prolonged screen time	Snacktivity** Light activity** Moderate activity** Vigorous activity** Muscle strengthening activity**

** See Glossary for definitions.

Exchange		For
Driving short distances	→	Walking, cycling or scooting
Prolonged driving	→	Regular breaks during driving
Taking a lift or escalator	→	Using the stairs
Prolonged sitting/screen time	→	Light activity such as standing and walking
Light activity	→	Moderate activity
Moderate activity	→	Longer or more frequent moderate activity Higher-intensity sessions

The concept for describing recommended changes in Tables 2, 3, 8 and 9 comes from the *Nordic Nutrition Recommendations 2012: Integrating nutrition and physical activity* (Nordic Council of Ministers 2014).

The Eating and Body Weight Statements

Overall, the evidence considered for the Eating Statements (1–3) and Body Weight Statement (see Table 1 in the Introduction) consistently describes the features of a healthy diet that can lower the risk of developing non-communicable diseases.

Based on this evidence and specific consideration of the body's need for certain amounts of essential nutrients (NHMRC 2006), the Eating Statements describe an eating pattern that:

- includes a lot of vegetables and fruit
- includes whole grains, low- or reduced-fat milk products, legumes, nuts, seeds, fish and other seafood
- is low in processed meats, saturated fat, sodium and sugar-sweetened foods and drinks
- is rich in essential nutrients for the body
- is linked with less excess weight gain (especially when a person eats foods low in energy (kilojoule) density and also has a physically active lifestyle)
- is linked with a lower risk of developing non-communicable diseases such as cardiovascular disease, stroke and cancer.

Evidence

As highlighted in Table 1, the Statements are based on various international evidence reviews, reports and guidelines chosen by the Ministry of Health and the EAG Technical Advisory Group. The various evidence reports informing Eating Statements 1–3 and the Body Weight Statement used a range of different methodologies and their evidence comes from links between health outcomes and specific foods and overall eating patterns. The combined evidence for each Statement is summarised in the Reasons for the recommendation section.

For more specific and detailed information on this evidence, see Appendix 2 for document titles and websites.

Additional information for the Eating Statements (1–3) and Body Weight Statement has come from general nutrition textbooks such as the *Essentials of Human Nutrition* (4th ed) (Mann and Truswell 2012). Other evidence used beyond that discussed above is referenced.

The evidence base used for Eating Statement 4 (on Alcohol) and Statement 5 (on Food Safety) is highlighted within each section.

Eating Statement 1

Enjoy a variety of nutritious foods every day including:

plenty of vegetables and fruit

grain foods, mostly whole grain and those naturally high in fibre

some milk and milk products, mostly low and reduced fat

some legumes*, nuts, seeds, fish and other seafood, eggs, poultry (eg, chicken) and/or red meat with the fat removed

By eating a variety of foods each day, people are more likely to get the essential nutrients they need to stay healthy and lower their risk of developing non-communicable diseases. Different foods provide different types and amounts of nutrients; no single food or food group provides all the nutrients the body needs.

Healthy eating patterns involve eating a range of foods from the four food groups described above. The four food groups provide a framework for eating in a way that meets the body's needs. Each food group contains foods with some common key nutrients (see Appendix 3). This section describes the proportion and amount of each food group that New Zealand adults need. It is a flexible eating pattern that allows people to choose their own foods. It is also easy to adapt it for different cultures, food preferences and budgets.

* Legumes include lentils, split peas, chickpeas and cooked dried beans (eg, kidney beans, baked beans).

Enjoy a variety of nutritious foods every day including:

plenty of vegetables and fruit

Reasons for the recommendation

Vegetables and fruit provide vitamins, minerals and dietary fibre as well as many other phytonutrients (beneficial chemicals found in plants).

- Examples include folate in green leafy vegetables; pro-vitamin A (carotenoids) in yellow, orange, red and green vegetables; and potassium in a wide range of vegetables and fruit.
- Eating vegetables and fruit:
  - can help prevent excess weight gain and obesity as most vegetables and fruit are low in energy (kilojoules) and generally high in dietary fibre compared with many other foods
  - protects the body against non-communicable diseases such as heart disease, stroke and some types of cancers.

Evidence points particularly to the value of non-starchy vegetables in the diet. For example, the World Health Organization's (WHO) recommendation on vegetables does not include starchy vegetables (WHO 2003). However, potatoes and other starchy vegetables, such as kūmara and taro, are traditional staples in many people's diets. Some also have cultural significance. Starchy vegetables provide nutrients such as carbohydrate and some vitamins and minerals to the diet and can be filling. However, they tend to be denser in energy (kilojoules) so it is healthier to have more non-starchy vegetables than starchy vegetables on the plate.

What are New Zealand adults doing?

In 2013/14, more than half of New Zealand adults[6] ate the recommended quantities of either vegetables or fruit, but less than half (41%) ate the recommended amounts of both.

64 %

ate three or more servings of vegetables a day.

57 %

had two or more servings of fruit a day.

Less likely to eat the recommended amounts of vegetables

Younger adults, Pacific and Asian adults and adults living in the most socioeconomically deprived areas.

Less likely to eat the recommended amounts of fruit

Younger adults, Māori and Pacific adults and adults living in the most socioeconomically deprived areas.

6 The 2013/14 New Zealand Health Survey (Ministry of Health 2014a) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

Choosing vegetables and fruit

The Ministry of Health recommends that New Zealand adults eat at least three servings of vegetables and two servings of fruit each day.

Table 4: Serving size advice*

Food group
Vegetables and fruit (including fresh, frozen, and canned) For advice on dried fruit and fruit juice see the information box 'What about fruit juice and dried fruit?' in the Eating Statement 2 section.
Amount recommended
Eat at least 5 servings per day: at least 3 servings of vegetables and at least 2 servings of fruit.
Serving size examples
Vegetables (non-starchy) • ½ cup cooked vegetable (eg, pūhā, watercress, silverbeet, kamokamo (squash), carrot, broccoli, bok choy, cabbage, taro leaves) • ½ cup salad or mixed vegetables. **Vegetables (starchy)** • 1 medium potato (135 g) or similar sized piece of kūmara, taewa (Māori potato), yam (Pacific or NZ), taro, cassava or green banana (technically a fruit).
Serving size examples
Fruit • 1 medium apple, pear, banana or orange • 2 small apricots or plums • ½ cup fresh fruit salad • ½ cup stewed fruit (fresh, frozen or canned).

* This serving size advice is under review but is current until new advice is published.

Seasonal fresh vegetables and fruit are a great choice in a healthy eating pattern. Frozen and canned vegetables and fruit are also good options. They can be fast to prepare, good value for money and a healthy way to include vegetables and fruit in daily meals.

- If choosing canned vegetables or fruit, look for those with the least sodium (salt) or sugar by comparing the labels of similar foods.
- Try growing vegetables and fruit or gather varieties growing wild such as watercress.
- Store vegetables and fruit carefully to keep their flavour, quality and nutrients.
- Wash vegetables and fruit before eating them. When possible, wash rather than peel them so that you eat the nutrients that are in and near the skin of vegetables and fruit.
- Do not overcook vegetables or fruit as this can destroy their nutrients.

For more advice on including vegetables and fruit in the diet refer to the Useful Links section near the end of this document.

Enjoy a variety of nutritious foods every day including:

grain foods, mostly whole grain and those naturally high in fibre

Reasons for the recommendation

Eating whole grain and high fibre grain foods is linked with a lower risk of cardiovascular disease, type 2 diabetes, weight gain and some cancers, such as bowel cancer.

- Whole grain and high fibre grain foods provide energy (mainly from carbohydrate but also some protein), dietary fibre, vitamins including B group vitamins (except B12) and vitamin E (found particularly in wheatgerm) and minerals, such as magnesium, calcium, iron, zinc and selenium.
- Grains are a big part of the diets around the world and for this reason they are considered dietary staples. They are generally affordable and easily available foods that give people some of the nutrients they need.
- Whole grains and those high in naturally occurring fibres provide better health benefits than more refined grains. In the definition of the Food and Agriculture Organization of the United Nations (FAO) and WHO (Mann et al 2007), dietary fibre is described as, and limited to, polysaccharides that are part of the plant cell wall, indicating fibre that is a naturally occurring part of the plant.

Background

Grain foods, also known as cereals, come from plants. Some of the grains that New Zealanders commonly eat are wheat, rice, oats, rye and barley. Less commonly eaten is millet, maize (corn) and more recently spelt (a type of wheat).

What are whole grains?

There is no one universally agreed definition of the term whole grain. It is common to use 'whole grains' or 'intact grains' to mean grains that still have their key parts intact – that is, the bran, endosperm and germ (see Figure 3). In the Food Standards Code[7] definition, whole grain includes milled, dehulled, cracked, flaked or ground grains that contain the bran, endosperm and germ in the same proportions as the intact grain.

What are New Zealand adults doing?

Many New Zealand adults[8] eat bread as a source of grain. In the 2008/09 New Zealand Adult Nutrition Survey:

10–14 %

Only 10–14 percent of adults usually ate heavy-grain bread (which has the most whole grains).

7 The Food Standards Code sets standards for foods commercially available in New Zealand and Australia, which must be followed by law. The Code contains standards for food additives, food safety and labelling.

8 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

Figure 3: Key parts of a grain

Anatomy of a grain

Bran: protects the seed
Fibre, B vitamins and minerals

Endosperm: energy for the seed
Carbohydrates, some protein, some B vitamins

Germ: nourishment for the seed
B vitamins, vitamin E, minerals, phytochemicals

The bran and germ are removed when whole grains are refined.

Whole grains are naturally high in dietary fibre and provide energy (kilojoules), vitamins and minerals. Based on the Food Standards Code definition, examples of whole grain products are: whole wheat flour, wheat flakes, bulgur wheat, whole and rolled oats, oatmeal, oat flakes, brown rice, whole rye and rye flour and whole barley.

What are refined grains?

Refined grains have had most or all of the bran and germ removed, leaving only the endosperm. They provide more energy (kilojoules) but fewer nutrients and much less fibre. Refined grains include white rice and are found in white bread, white pasta and many breakfast cereals (for example, puffed rice). Foods like cakes, muffins, scones, pies and sweet or savoury biscuits are often made using refined grain products with added sugar and fat.

What about 'added-fibre' breads?

Fibre-enriched (or 'added-fibre') bread is typically made from refined white flour that has had fibre such as inulin and polydextrose added to it. There is not yet enough evidence to know whether this type of fibre-enriched bread is as beneficial to health as naturally occurring fibre. Choosing products that still have their fibre intact, such as whole grain breads, are better options.

Most adults ate more refined bread

25–30 percent ate white bread, and 50 percent ate light-grain breads.

More likely to eat white bread

Māori and Pacific adults and adults living in socioeconomically deprived areas.

Grain foods, especially breads, are one of the key sources of dietary fibre for New Zealand adults.

However, current data show dietary fibre intake is lower than recommended:

- the average dietary fibre intake for New Zealand adults is 20 g a day
- recommendations (NHMRC 2006) suggest that adults should eat 25–30 g of dietary fibre every day and that ideally, to prevent non-communicable disease, women should have 28 g and men should have 38 g.

Choosing grain foods, mostly whole grain and those naturally high in fibre

The Ministry of Health recommends that New Zealand adults eat at least six servings of grain foods each day.

Table 5: Serving size advice*

Food group
Grain foods, mostly whole grain and those naturally high in fibre (includes some breakfast cereals, breads, rice and pasta).
Amount recommended
Eat at least 6 servings per day.
Serving size examples
• 2 breakfast wheat biscuits • 1 whole-grain bread roll • 1 sandwich-slice whole grain bread • ½ cup muesli • ½ cup cooked porridge • 1 cup cooked pasta • 1 cup cooked rice.

* This serving size advice is under review but is current until new advice is published.

Few of the grain food products currently available are 100 percent whole grain.

Most have refined or milled/processed grains added to make them easier to eat or digest. To increase your intake of whole grains, where possible, choose grain foods that have the greatest amount of whole grain, such as:

- whole grain bread, whole grain cereals like oats (porridge) and whole wheat biscuits, brown rice and wholemeal pasta
- foods made from whole wheat flour, wheat flakes, whole barley, whole rye and rye flour.

Compare the nutrition information panel on food labels of similar foods to find out which have more fibre per 100 g.

For more advice on including whole grain foods in the diet refer to the Useful Links section near the end of this document.

Enjoy a variety of nutritious foods every day including:

some milk and milk products, mostly low and reduced fat

Reasons for the recommendation

Milk and milk products are highly nutritious and contain protein, vitamins and minerals. Specific vitamins include riboflavin, vitamins A, D and B12, while minerals include calcium, phosphorus, zinc and iodine.

- Milk and cheese contribute saturated fat to the diet (Ministry of Health 2012).
- The Ministry of Health recommends that adults choose low- and reduced-fat milk and milk products to reduce their intake of saturated fat and total energy (kilojoules).

Background

What are low- and reduced-fat milk and milk products?

The Food Standards Code (FSANZ 2014) defines low fat as 1.5 g (or less) of fat per 100 ml of liquid (ie, 1.5% fat), and 3 g (or less) of fat per 100 g of solid food (ie, 3% fat). Based on these criteria, the only low-fat milk products are trim (0.5%) or trim calcium-enriched (0.1%) milk, low-fat yoghurt's (0.4%) and 'lite' cottage cheese (0.6%). Standard cottage cheese, at 3.5 percent fat, does not meet these criteria, although it is low in fat (and saturated fat) compared with standard cheese (37%).

'Reduced' fat or 'lite' products must have at least 25 percent less fat than the standard product (FSANZ 2014). Reduced-fat milk has around 1.5 percent fat, compared with 3.3 percent for homogenised and 4 percent for full-cream milk.

What about cheese?

Most cheeses are high in fat, much of which is saturated. For example, mild cheddar has around 37 g of fat per 100 g; 24 g of that fat is saturated. A few cheeses have less fat, such as feta (20%), standard Camembert (22%) and Edam (27%), although these are still high-fat foods. Ricotta cheese at 11 percent fat is a moderate-fat food.

Other milk products not included in this food group

Butter, cream and products like cream cheese and sour cream are made from milk fat so have high levels of saturated fat and are low in protein and calcium. 'Reduced-fat' or 'lite' versions of these products are still relatively high in saturated fat. Ice cream and sweetened condensed milk do contain some protein and calcium but are generally high in fat and contain added sugar.

What about non-dairy milk alternatives?

While most New Zealand milk products come from dairy cows, some come from goats and sheep. Plant-based milk alternatives made from soy, rice or nuts provide non-animal based options. These milk alternatives are not naturally high in calcium and other nutrients found in cows' milk such as vitamin B12 and riboflavin. If someone is using plant milk alternatives to replace dairy products in their diet, they should choose the products that have these nutrients added, in particular calcium.

Choosing milk and milk products, mostly low and reduced fat

The Ministry of Health recommends that New Zealand adults eat or drink at least two servings of milk and milk products each day.

Table 6: Serving size advice*

Food group
Milk products (includes milk, yoghurt, cheese) and alternatives.
Amount recommended
Eat at least 2 servings per day (choose low- or reduced-fat options.
Serving size examples
• 1 glass milk (250 ml) • 1 small pottle yoghurt (125-150 g) • 2 slices cheese (40 g) • 1 glass calcium-added (fortified) soy milk (250 ml).

* This serving size advice is under review but is current until new advice is published.

Choose some low-fat milk products (eg, green or yellow label milk, low-fat yoghurt) or milk alternatives with added calcium (eg, soy or rice milk with added calcium).

- Using reduced-fat (light-blue label) milk can be a good step towards low-fat options.
- Use low-fat milk:
  - with breakfast cereals like wheat biscuits or porridge
  - in hot drinks like tea and coffee
  - for cooking, such as when making custard or rice pudding.

Evaporated milk, ultra-heat treated (UHT) milk and dried milk powder (made up following the instructions on the packet) are alternatives to fresh milk. Choose reduced or low-fat options.

If choosing cheese, choose low- or moderate-fat cheeses, or low- or reduced-fat hard cheese varieties. Eat cheese in small amounts or less frequently.

Sugar has been added to some milk products, such as flavoured milk and many yoghurt's. Although they may be lower in fat, they may contain a lot of sugar and so they have more energy (kilojoules).

For more advice on including low and reduced fat milk and milk products in the diet refer to the Useful Links section near the end of this document.

What are New Zealand adults doing?

In the 2008/09 New Zealand Adult Nutrition Survey[9]:

50 %

About half of New Zealand adults usually used reduced-fat or trim (low-fat) cows' milk.

Less likely to use low-or reduced-fat milk

Younger adults, men, Māori and Pacific adults and those living in more socioeconomically deprived neighbourhoods.

9 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

Enjoy a variety of nutritious foods every day including:

some legumes*, nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with the fat removed

Reasons for the recommendation

Eating patterns that include legumes, nuts, fish and other seafood are linked with a lower risk of cardiovascular disease, type 2 diabetes, weight gain and some cancers.

- Legumes, nuts and seeds are rich in nutrients and high in fibre and are a source of protein. Some types of nuts are useful sources of specific nutrients (eg, almonds provide calcium and Brazil nuts provide selenium). Nuts are high in unsaturated fats, but eating a small amount (around 30 g) each day should not cause excess weight gain, especially if you eat them instead of other, less healthy foods (Tey, Brown and Chisholm 2012).
- Oily fish such as salmon, tuna, mackerel and sardines and some seafood like mussels are good sources of omega-3 fatty acids. Omega-3 is linked with a lower risk of heart disease and stroke (Heart Foundation 2012).
- Eggs provide useful nutrients and can be part of a healthy diet for adults in general (Heart Foundation 2015).
- Poultry (eg, chicken) is a good source of protein and some minerals including iron and zinc. Poultry has a variable fat content depending on the type of bird, but as most of it can be found in and around the skin it is easy to remove (Mann and Truswell 2011).
- Red meat is an excellent source of key nutrients like iron (in an easily absorbed form) as well as zinc. Low iron levels are a problem for some New Zealanders, particularly young women.
- The World Cancer Research Fund (WCRF) reports that eating more than 500 g of cooked red meat (equivalent to 700–750 g when raw) each week is linked with a higher risk of colorectal cancer (WCRF and AICR 2007, 2011).
- Eating processed meat (eg, salami, bacon, ham and luncheon) is also linked with a higher risk of colorectal cancer (WCRF and AICR 2007, 2011). In addition, processed meats can be high in fat and salt. Some manufacturers are working to reduce the amount of fat and salt as part of their work to modify their food products. For more information go to: www.heartfoundation.org.nz/programmes-resources/food-industry-and-hospitality/heartsafe

Background

This food group contains a wide range of foods from both vegetable and animal sources. These foods provide a range of nutrients to the diet but the key nutrient they have in common is protein.

Choosing legumes*, nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with the fat removed

The Ministry of Health recommends New Zealand adults eat at least two servings of legumes, nuts or seeds a day or at least one serving of fish and other seafood, eggs, poultry or red meat a day.

* Legumes include lentils, split peas, chickpeas and cooked dried beans (eg, kidney beans, baked beans).

Table 7: Serving size advice ±

Food group	Serving size examples
Legumes, nuts, seeds, fish and other seafood, eggs, poultry or red meat with fat removed.	• ¾ cup cooked dried beans, split peas, lentils • 30 g nuts or seeds (small handful) • 1 medium fillet of cooked fish (100 g) • 1 egg (50 g) • 2 drumsticks or 1 chicken leg • 2 slices cooked meat (approximately 100 g) • ¾ cup mince or casserole.
Amount recommended	
Eat at least 2 servings of legumes, nuts or seeds a day OR Eat at least 1 serving of fish and other seafood, eggs, poultry or red meat a day.	

What are New Zealand adults doing?

In the 2008/09 New Zealand Adult Nutrition Survey[10]:

- the amount of legumes adults ate was not reported
- most adults ate fish, chicken and red meat regularly.

Red meat

Around 60 percent of adults ate red meat at least three times each week (63% of males and 57% of females).

Chicken

85 percent adults ate chicken at least once a week.

42 %

of adults ate fresh or frozen fish and other seafood at least once a week.

29 percent ate canned fish and other seafood at least once a week.

Daily quantity

Adults who ate beef and veal ate an average of 180 g (cooked) a day; about 10 percent of these consumers ate about 400 g a day. Younger males (ie, those under 50 years of age) tended to eat the most red meat.

(Parnell et al 2012)

Nuts

- Around 29 percent of adults ate nuts:
  - as whole nuts (7%), in nut butters (7%) and from hidden sources[11] (19%)
  - in average quantities of 18 g of nuts a day.

(Brown et al 2014)

± This serving size advice is under review but is current until new advice is published.

10 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

11 Hidden sources include nuts as ingredients in dishes or commercial food products such as snack bars.

Add legumes and/or vegetables to meat dishes as a way to add more plant foods to the diet and also make the same amount of meat go further. For example, add lentils or cooked kidney beans to mince dishes; or cabbage, frozen peas and carrots to stews or boil-ups. In this way, you can get extra servings for a lower cost.

Eating a variety of different types of nuts and seeds provide a range of important nutrients to the diet (Tey, Brown and Chisholm 2012).

- Choose unsalted, raw nuts and seeds or those toasted without added fat (dry roasted).
- Replace less healthy foods such as crisps or a snack bar – with a small handful (30 g) of nuts, preferably mixed, each day.
- Use plain, unsalted nut butters, instead of butter or jam, to improve the quality of the diet.

Fresh fish is ideal but using canned fish or plain frozen fish is a convenient and affordable way to add fish to the diet. Fishing and collecting seafood are popular recreation activities and can have cultural significance for many New Zealanders. If you eat red meat, eat no more than 500 g cooked (equivalent to 700–750 g when raw) red meat each week.

- If your serving size is 150 g cooked (around 175 g raw) a day, this means you could eat red meat three times each week and still be within the recommended level.

Limit intake of processed meats such as luncheon, salami, ham, bacon and sausages. Instead use alternative protein-rich sandwich fillings such as hummus, leftover meat, canned tuna or salmon, peanut butter and eggs.

What about Pacific meat dish favourites?

Meals that include canned corned beef, lamb or mutton flaps and corned brisket (as in povi masima) are popular among many Pacific peoples. Canned corn beef is usually high in fat and salt, while lamb or mutton flaps and brisket can be high in fat. A few simple changes in the cooking process can make these potentially high-fat and high-salt meals much healthier. These changes apply to any dishes that use fatty or salty meat.

- Cut off the visible white fat from the meat and throw it away.
- Take canned corned beef out of the can and heat it in the microwave for one minute to melt the fat. Drain off this melted fat before cooking.
- For corned (or salted) meat, change the cooking water two or three times during the cooking process to remove the salt.
- For any of these meats, either add plenty of non-starchy vegetables during cooking or serve them with the meat, along with some taro or green banana.

The Heart Foundation and Beef and Lamb New Zealand have produced three visual resources that show how to make healthier povi masima and meals using mutton flaps and canned corn beef. Go to: www.heartfoundation.org.nz. For other ideas for healthy Pacific meals, see the Useful Links section.

More advice on including legumes, nuts, seeds, fish and other seafood, eggs, poultry or red meat with fat removed into the diet, refer to the Useful Links section near the end of this document.

Eating Statement 2

Choose and/or prepare foods and drinks:

with unsaturated fats instead of saturated fats

that are low in salt (sodium); if using salt, choose iodised salt

with little or no added sugar

that are mostly 'whole' and less processed

Choose and/or prepare foods and drinks:

with unsaturated fats instead of saturated fats

Reasons for the recommendation

The types of fat people consume affects their risk of cardiovascular disease.

- Reducing saturated fat intake and partially replacing it with unsaturated fats, in particular polyunsaturated fats, is linked with a decreased risk of cardiovascular disease (Hooper at al 2015).
- The evidence base underpinning these Guidelines Statements supports dietary patterns that include plant and marine based fats, but that are low in saturated fat.
- The recommended intake for saturated fat and trans-fats together is no more than 10 percent of total energy (NHMRC 2006, Nordic Council of Ministers 2014).

Background

Fats are found in both animal and plant foods and together they provide fat-soluble vitamins A, D, E and K. Fats contain a mixture of saturated and poly- and mono-unsaturated fatty acids and are categorised according to the proportions of fatty acids and their chemical structure. Animal fats are mostly saturated while plant or vegetable fats are mostly mono- or poly-unsaturated. The exceptions are coconut and palm oil, which contain high levels of saturated fatty acids.

Both saturated and unsaturated fats are very energy-dense. Eating a lot of fat can contribute to excess energy (kilojoules) intake, which in turn can lead to weight gain.

What are trans-fatty acids?

Trans-fatty acids (TFAs) occur naturally in some foods such as in butter, cheese and meat in small amounts. However, most TFAs in foods have been formed during food manufacturing processes such as hydrogenation. There is strong evidence that these TFAs increase the amount of low-density lipoprotein (LDL) cholesterol in the blood, which is a major risk factor for coronary heart disease.

The World Health Organization (WHO) recommends that no more than one percent of the daily energy intake comes from TFAs. Intake levels of TFAs in New Zealand are estimated to be on average 0.6 percent (FSANZ 2009), which is well below the one percent upper level.

Choosing or preparing foods and drinks with unsaturated fats instead of saturated fats

Unsaturated fats come mainly from plants. They are in foods such as seeds, nuts, avocados, canola and olive oil and plant-based margarines. Some unsaturated fats come from animals, including oily fish like salmon, tuna, mackerel and sardines.

Table 8: Ways to eat less saturated fat and make healthier choices

Ways to eat less saturated fat

- Choose meat with little visible fat or remove fat before cooking.
- Cook meat in a way that removes rather than adds fat. For example, you could:
  - grill it
  - roast or bake it, putting the meat on a rack so fat can drip off during cooking
  - boil it and skim off the liquid fat that comes to the surface.
- Leave the skin on when roasting or grilling chicken to help keep in the moisture, then remove the skin and serve the chicken without it.

Exchange		For
Butter	→	Margarine or other plant-based spreads
Lard and/or dripping	→	Water, small amount of plant-based oils, eg, canola
Full-fat milk, high-/full-fat cheese	→	Low- and reduced-fat milks, reduced-fat cheese
Coconut cream	→	'Lite' coconut cream or coconut milk or dilute with water
High-fat takeaways	→	Healthier takeaways, eg, salad-rich kebabs or wraps; vegetable-rich non-fried Asian rice or noodle dishes
Highly processed high-fat convenience foods, eg, some snack bars and crisps	→	Whole or less processed foods, eg, vegetables, fruit, unsalted nuts

What about coconut oil?

The Ministry of Health recommends using unsaturated plant oils such as olive, canola or rice bran oil, rather than coconut oil, as the main dietary or cooking oil.

The recent heavy marketing of coconut oil is based on misinformation. Much of the research used to promote coconut oil was conducted on animals or with medium-chain triglycerides (MCTs). The evidence on MCT oils cannot be applied to coconut oil as they are different substances.

Only a few studies have looked at the effect of coconut oil on humans. Their findings suggest that coconut oil is better than butter for blood cholesterol levels but not as good as unsaturated plant oils. Coconut oil is around 92 percent saturated fat, which is a very high proportion of its total fat content.

The Heart Foundation considers that when indigenous people consume coconut flesh and milk along with fish and vegetables, and they are also physically active, the coconut consumption is unlikely to put them at risk of cardiovascular disease. They are in a very different situation from people who consume coconut oil along with a typical western diet.

More information, see the Heart Foundation's 2014 evidence paper on coconut oil and the heart at: www.heartfoundation.org.nz

For more advice on consuming, foods and drinks with unsaturated fats instead of saturated fats, refer to the Useful Links section near the end of this document.

What are New Zealand adults doing?

In the 2008/09 New Zealand Adult Nutrition Survey[12], the average amount of total fat that New Zealand adults consumed was around 34 percent of their total energy. This proportion is just within the recommended range of 20–35 percent (NHMRC 2006). However, too much of this fat was saturated.

≤10 %

The recommended intake for saturated fat and trans-fats together is no more than 10 percent of total energy.

13%

Saturated fat contributes around 13 percent of total energy (kilojoules) intake for New Zealand adults.

- Most of the saturated fat was from butter, milk, 'bread based dishes',[13] cheese and fat added to (including when cooking) 'potatoes, kūmara and taro'.[14]

12 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

13 'Bread based dishes', as defined in the national nutrition surveys, include sandwiches, filled rolls, hamburgers, hotdogs, pizza, nachos, doner kebabs, wontons, spring rolls and stuffing.

14 The 'potatoes, kūmara and taro' food group in the national nutrition surveys includes high-fat dishes like hot chips, crisps, hash browns, wedges and potato dishes. The fat content comes from added fat during cooking as these starchy vegetables are not naturally high in fat.

Choose and/or prepare foods and drinks:

that are low in salt (sodium); if using salt, choose iodised salt

Reasons for the recommendation

Eating a diet that is low in salt (sodium) is a key part of having a healthy eating pattern that is linked with a lower risk of developing non-communicable diseases.

- WHO strongly recommends consuming less sodium to lower blood pressure and the risk of cardiovascular disease and stroke (WHO 2012a).
- New Zealanders consume more sodium than recommended.

Background

Sodium helps to maintain important body functions. Most dietary sodium comes from salt (sodium chloride) in processed foods while about 10–20 percent comes from discretionary salt (eg, salt added during and after cooking) (Brown et al 2009). Processed foods that are high in sodium include savoury snacks (eg, crisps), processed meat (eg, sausages, bacon, ham and luncheon, salted and canned corned beef), sauces (eg, tomato and soy) and fast foods. Bread contains moderate amounts of sodium but, because people tend to eat it frequently, it is often a major source of sodium in the diet.

Some food manufacturers are working to decrease the amount of salt in their bread products as part of food reformulation programmes. These programmes also involved lowering the salt content of processed meats and breakfast cereals. For more go to: www.heartfoundation.org.nz/programmes-resources/food-industry-and-hospitality/heartsafe

What are New Zealanders doing?

According to the 1997 National Nutrition Survey[15], key sources of sodium in the diet of New Zealand adults are:

10 %

processed meats

6 %

sauces

26 %

bread (26% of total sodium)

8 %

cakes, muffins, biscuits, pies and pastries

6 %

breakfast cereals

15 The 1997 National Nutrition Survey (Russell, Parnell, Wilson et al 1999) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

What is iodised salt?

Iodine is an essential nutrient and a component of thyroid hormones that is required for normal growth and development.

Most New Zealand soils are low in iodine, so locally produced foods have low concentrations of iodine. As a result, iodine has been added to table salt in New Zealand since the 1920s as a way to boost the population's iodine levels. Over time, research has improved understanding of the negative health effects of consuming too much salt so now the Ministry of Health encourages people not to add salt to their food. However, if people do add salt to food or in cooking, the Ministry of Health recommends using iodised salt.

Recently more New Zealanders are thought to have low iodine intakes resulting in a reoccurrence of mild iodine deficiency. For this reason, since 2009 all commercially made bread (except organic and unleavened breads) must now be made using iodised salt.

More information, go to:
www.health.govt.nz/our-work/preventative-health-wellness/nutrition/iodine

Choosing or preparing foods that are low in salt

Choose 'whole' or less processed foods that are low in sodium, including fresh or frozen vegetables and fruit, meat, fish and poultry.

Choose foods with the lowest amount of sodium by comparing the food labels.

Amount of sodium

- Low-salt foods have less than 120 mg of sodium per 100 g.
- Moderate-salt foods have 120–600 mg of sodium per 100 g.
- High-salt foods have more than 600 mg of sodium per 100 g.

(Stroke Foundation 2011)

If salt is added to food, use iodised salt but keep lowering the amount added over time to get used to the change in taste. Try other ways of enhancing the flavour. For example, use low-salt seasoning such as herbs, spices and/or citrus.

If cooking food with a high-salt content such as corned beef, cook it in water and change the water two or three times to remove excess salt.

For more advice on choosing and preparing foods that are low in sodium, refer to the Useful Links section near the end of this document.

Choose and/or prepare foods and drinks:

with little or no added sugar

Reasons for the recommendation

Having a diet that is low in added sugar is a key part of a healthy eating pattern that is linked with a lower risk of excess body weight and related non-communicable diseases.

- Because consuming free sugars[16] is linked with excess body weight and tooth decay, WHO strongly recommends that people lower their intake of free sugars to less than 10 percent of their total energy intake. To help prevent tooth decay in particular, WHO further suggests people lower their intake of free sugars to less than 5 percent of their total energy intake (WHO 2015a).
- Adding sugar increases the energy (kilojoules) content of food and drinks, but adds no other useful nutrients.

Background

Sugars are naturally present in a wide range of foods including fruits, grains and milk. Sugars are also added to foods in the form of white, brown or raw sugar, honey, syrups and extracts. Sugary drinks include fruit drinks[17], powdered drinks, cordial, carbonated or fizzy drinks, energy drinks, sports drinks and flavoured waters. Some of these drink products are now available with intense (artificial) sweetener instead of sugar.

What are New Zealand adults doing?

Major sources of added sugars in New Zealanders diets include:

- non-alcoholic beverages, such as sugary/fizzy drinks, fruit juice and cordial
- sugar and sweets
- baked goods, such as cakes and biscuits.

According to the 2008/09 New Zealand Adult Nutrition Survey,[18] New Zealand adults have sugary drinks regularly.

30 %

of New Zealand men and 17 percent of women have soft or energy drinks three or more times each week.

More likely to drink soft or energy drinks

Younger adults drink soft or energy drinks more frequently than older adults.

More likely to drink fruit juice or fruit drink

Over a third of New Zealand adults drink fruit juice or fruit drink three or more times each week.

16 The WHO Nutrition Guidance Expert Advisory Group (NUGAG) Subgroup on Diet and Health defines free sugars as 'all monosaccharides and dissacharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrup and fruit juices and fruit juice concentrates' (WHO 2015a).

17 In this document the term 'fruit drink' refers to a fruit-flavoured drink with added sugar.

18 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

What about fruit juice and dried fruit?

Fruit juice is a high-sugar drink as it contains all the naturally occurring sugar found in the many pieces of fruit required to make one glass of juice.

The Ministry of Health recommends eating fresh fruit and drinking plain water rather than drinking fruit juice. Fruit is more filling than juice and provides available vitamins, phytonutrients (beneficial chemicals), fibre and much less sugar than juice.

Dried fruit has had most of its water removed, leaving behind the nutrients but also concentrating all the sugar. Without the water, it can be easier to eat numerous pieces at one time so it becomes a very high-sugar snack, sticks more easily to teeth and increases the risk of cavities. The Ministry of Health recommends limiting the amount of dried fruit included in the diet.

Choosing or preparing foods and drinks with little or no added sugar

Choose foods with the lowest amount of added sugar.

- Compare the sugar content on food labels.
- Add little or no sugar to foods and drinks.

Choose healthy snacks such as vegetable sticks with a low-fat dip or spread (hummus, cottage cheese or yoghurt-based dips) or fresh fruit instead of sweet biscuits, cakes, chocolate or sweets.

Choose plain water or diet drinks rather than sugary drinks, juice, energy or sports drinks, cordial or powdered drinks.

Diet drinks use intense (artificial) sweeteners instead of sugar and usually contain little or no energy (kilojoules). Plain water is the best choice of drink, but diet drinks in moderation are a better option than sugary drinks.

If drinking sugary drinks, have them only:

- occasionally (less than once each week)
- in small quantities (limit to one glass or dilute with water)
- with food rather than between meals.

For more advice on choosing or preparing foods and drinks with little or no added sugar, refer to the Useful Links section near the end of this document.

Choose and/or prepare foods and drinks:

that are mostly 'whole' and less processed

Reasons for the recommendation

The international evidence that underpins these Eating Statements (see Table 1 in the Introduction section) provides a consistent picture of a healthy eating pattern.

- Diets high in vegetables, fruit, whole grains and those naturally high in fibre, legumes, nuts, dairy (including low-fat options) and fish and seafood are linked with better health and less non-communicable disease. These diets are low in processed meat, refined grains, saturated fat, sugar-sweetened foods and drinks, and salt/sodium.
- Highly processed foods often have added fat, sugar and/or salt and contain low levels of naturally occurring dietary fibre, vitamins, minerals and other phytonutrients. Research has shown only those having the lowest intakes of these foods were close to meeting nutrient goals for the prevention of obesity and non-communicable disease (Moubarac et al 2012).
- Highly processed food is beginning to dominate the food supply of high-income countries like New Zealand (Monteiro et al 2013). Healthier eating patterns based on regular, freshly prepared meals are being replaced with frequent snacking on energy-dense (high-kilojoule), fatty, sugary or salty ready-to-eat foods (Moubarac et al 2012; Monteiro et al 2013).
- In this changing food environment, the Ministry considers it important and timely to provide specific advice for health practitioners to support people wanting to make the healthiest choices from the growing range of food available.

Background

Food processing in general is not a problem for health. It has been around in its simpler forms for thousands of years. Advances in processing technology have, in general, led to a food supply that is safer, easier to use and much more varied than in earlier times. However, advances have also increased the availability of products that are highly refined and contain high levels of added saturated fats, sugar and salt. These foods are often appetising, convenient and heavily marketed and come in ready-to-eat forms; all of these characteristics encourage people to eat them.

Alongside the advice in Eating Statements 1, 2 and 3, specific advice and tools that consider the health-promoting properties of processed food are needed to help consumers choose the healthiest options from the increasingly wide range of food and food products now available.

What are New Zealand adults doing?

Female New Zealand adults[19] ate more snacks and snack bars (for example, crisps and muesli bars) in 2008/09 than in 1997.

(Smith et al 2015)

19 Data used defines adults from 15 years of age. The Eating and Activity Guidelines define adults as 19–64 years.

Useful definitions

The following terms have no widely agreed definitions. The definitions below are suggested to help interpret advice in this section.

Processed food

Any food that has been milled, cut, heated, cooked, canned, frozen, cured, dehydrated, mixed, packaged or undergone any other process that alters the food from its natural state. Processing may also involve the addition of other ingredients to the food (adapted from Dwyer et al 2012).

Whole foods

Foods that are close to their natural state but may have been harvested, washed or cleaned ready for consumption or cooking. Examples of whole foods are fresh vegetables and fruit, raw legumes, raw nuts and seeds, eggs, fish, chicken and red meat (with visible fat removed).

Less processed foods

Foods that have undergone some processing, but have kept most of their physical, chemical, sensory and nutritional properties (adapted from Dwyer et al 2012). They are usually processed with the aim of making the food:

- safer – for example, pasteurised milk products
- healthier – for example, low-fat milk, which contains less energy (kilojoules) and less saturated fat than full-fat milk
- more convenient to use – for example:
  - whole grains that have had their outer inedible husks removed but still have the edible parts of their structure
  - wholemeal flour ground from whole grains
  - frozen, packaged vegetables and fruit that may have been frozen quickly to keep their nutrient content
  - canned legumes, vegetables and fruit with no or minimal added sugar and/or salt, which have been prepared and cooked ready for use.

Highly processed food

These foods, or the ingredients used to make them, are heavily processed so they are usually very different from their natural states. Highly processed, ready-to-eat foods tend to be low in naturally occurring nutrients such as vitamins, minerals, fibre and other phytonutrients. They are often high in refined grains, energy (kilojoules), added saturated fat, sugar and/or salt (sodium).

Choosing or preparing whole and less processed foods

The Ministry of Health recommends that people follow an eating pattern, based mostly on whole or less processed foods, that is rich in naturally occurring nutrients and has no or very little saturated fat, added sugar and salt.

As often as possible, prepare meals at home using whole and less processed ingredients. Some processed food products can provide convenient, affordable, quick and healthy alternative ingredients for meals.

- Good examples are canned vegetables, fruit, legumes and fish with no or minimal added sugar and/or salt.
- If using processed food products, choose the healthiest options available, eg, products that:
  - are lower in saturated fat, sugar and/or salt
  - contain ingredients that have been minimally processed.

For example, the healthiest bread would have the lowest salt content and the highest fibre content per 100 g on the nutrition label. Also check if whole grains and seeds are visible in the bread.

- Consider the food product as a whole. There is little health benefit in choosing food products that are low in fat but high in refined grains, sugar and salt.

Limit intake of highly processed foods that are high in saturated fat, salt and/or sugar and low in nutrients. For example, sweets, sugary drinks, biscuits, cakes, pastries, pies, instant noodles, processed meats, pizza, deep-fried foods, crisps and other savoury snacks. Consider exchanging less healthy for healthier options, as shown below.

More information on choosing or preparing whole or less processed foods, refer to the Useful Links section near the end of this document.

Table 9: Making healthier choices

Exchange:		For:
High sugar breakfast cereal	→	Whole grain cereal like porridge or whole wheat breakfast biscuits
White bread	→	Higher-fibre, whole grain varieties
Dessert-style yoghurt or dairy desserts	→	Low-fat and low-sugar yoghurt mixed with fresh/frozen fruit
Muesli bars	→	Fresh fruit or small handful of unsalted nuts
Crisps and cream-based dip	→	Raw vegetable sticks and hummus
Sugary drink	→	Glass of chilled water with fresh mint or lemon

The Health Star Rating system

In 2014 New Zealand joined with Australia's voluntary front-of-pack labelling system, the Health Star Rating system.

This system is designed to help consumers make better-informed, healthy choices quickly and easily when comparing similar packaged food products, eg, when comparing breakfast cereals.

The Health Star Rating system assesses foods using a star rating scale of ½ to 5 stars. The more stars a food has, the higher its overall nutritional value. Under this system, a food label uses nutrient information icons to show how much energy (kilojoules), saturated fat, sodium (salt) and sugars a product contains per 100 g. It can also show the amount of one other nutrient relevant to that food such as calcium or fibre.

More information go to the Ministry for Primary Industries website: www.foodsafety.govt.nz/industry/general/labelling-composition/health-star-rating

Eating Statement 3

Make plain water your first choice over other drinks

Reasons for the recommendation

Water is essential to life.

- Plain water is the best choice of drink because in most cases it is exactly what the body needs (along with a varied, healthy diet).
- Plain water contains no energy (kilojoules) so will not increase a person's total energy intake (and ultimately their weight).

Background

The body of an average-sized adult contains approximately 35–45 litres of water, which is around 60 percent of their body weight. The body needs water for key processes like digestion, absorption, transporting food, removing waste and controlling the body's temperature (thermoregulation).

The body gets around 20 percent of its total water intake from solid food (700–800 ml); it also produces around 250 ml from breaking down food within the body. Most of the body's needs come from the fluid a person drinks. The body loses water through skin and lungs (known as insensible water loss), sweat, faeces and urine. The body makes sure it has enough water to function adequately by balancing output with input.

Table 10: How much fluid does the body need?

Adults (19–70+ years)

Total water (food and fluids)

3.4 L/day

Fluids (including plain water, milk)

2.6 L/day
(10 x 250 ml cups)

Total water (food and fluids)

2.8 L/day

Fluids (including plain water, milk)

2.1 L/day
(8 x 250 ml cups)

Source: Nutrient Reference Values for Australia and New Zealand (NHMRC 2006)

What about other drinks?

Low-fat milk is a good supplementary drink as it is relatively low in energy and rich in nutrients such as calcium and protein.

Many people enjoy herbal teas, which provide fluid while not adding extra energy.

Black tea and coffee are also popular and there is some evidence that both can provide benefits for health such as antioxidative properties. Tea and coffee both contain caffeine (a stimulant) and tea contains tannins, which lower the amount of iron that the gut absorbs. Therefore, the Ministry of Health recommends drinking only moderate amounts of tea and coffee.

For more advice on sugary drinks, see the recommendations on sugar in Eating Statement 2.

Choosing plain water over other drinks

Choose plain, where possible fluoridated, tap water.

- If your water is not on a town supply, check with your local council or public health unit about whether it is safe.
- Most people do not need to buy bottled water for everyday use. However, bottled water can be a great choice if you are away from home or do not have ready access to safe drinking water. Alternatively, fill bottles with tap water to take with you.

Drinking one or two glasses of plain low-fat milk (yellow or green label) each day helps to meet your fluid needs and provides useful nutrients like protein and calcium too.

For more advice on choosing drinks, refer to the Useful Links section near the end of this document.

Fluoridation

The Ministry of Health strongly supports water fluoridation as a safe, effective and affordable way to prevent and reduce tooth decay across the whole population. Most tooth decay is preventable, and water fluoridation is a simple way to prevent it.

For more advice on water fluoridation, go to the Ministry of Health website: www.health.govt.nz

What are New Zealand adults doing?

Most town-supplied tap water in New Zealand is safe to drink and widely available. During 2013/14 over 97 percent of New Zealanders[20] received drinking water that met the bacterial and chemical standards. This percentage is higher than the Ministry of Health target of 95 percent (Ministry of Health 2015).

97 %

received drinking water that met the bacterial and chemical standards.

20 Those on registered networked community drinking-water supplies serving over 100 people.

Eating Statement 4

If you drink alcohol, keep your intake low

Stop drinking alcohol if you could be pregnant, are pregnant or are trying to get pregnant

Reasons for the recommendation

The Health Promotion Agency (HPA) is responsible for giving advice on drinking alcohol. HPA's evidence is based on current scientific research and evidence, which includes:

- *Australian Guidelines to Reduce Health Risks from Drinking Alcohol* (NHMRC 2009a)
- *Alcohol and Health in Canada: A summary of evidence and guidelines for low-risk drinking* (Butt et al 2011).

Following the HPA's low risk alcohol drinking advice reduces a person's:

- short term injury risk
- risk of becoming overweight or obese
- likelihood of getting a number of non-communicable diseases including liver damage
- likelihood of getting cancer of the large bowel and rectum
- risk of brain and nervous system damage.

Alcohol is a concentrated form of energy (kilojoules) with one gram providing 29 kilojoules (or 7 calories). Along with the kilojoules from the carbohydrate in many alcoholic drinks or drink 'mixes', drinking alcohol can add more energy to the diet than people are aware of. For example, one small bottle of beer (330 ml) contains 508 kilojoules, and one standard drink of wine (100 ml) has around 350 kilojoules.

Background

For HPA's advice on low-risk drinking, go to its website: www.alcohol.org.nz. Many of its alcohol publications also contain advice. For example, *Alcohol – the Body and Health Effects* (HPA 2014) provides useful summaries of the effects of alcohol, based on evidence and is available on the website.

What are the recommendations on drinking alcohol?

If you drink alcohol, keep your intake low.

Long-term health risks can be reduced by:

- drinking no more than two standard drinks a day and no more than 10 standard drinks each week for women
- drinking no more than three standard drinks a day and no more than 15 standard drinks each week for men
- having at least two alcohol free days every week for both women and men.

Note: A standard drink is a 330 ml bottle of beer, or 100 ml of wine, or 30 ml of straight spirit (each is equivalent to 10 g alcohol).

To lower the risk of injury:

- women should drink no more than four standard drinks a day on any single occasion
- men should drink no more than five standard drinks on any single occasion.

Advice on the safe amounts that men and women can drink is based on evidence showing the effect of a number of factors including body size and composition, ability to metabolise alcohol and a woman's higher risk of developing a range of health conditions than a man.

(HPA 2014)

What are New Zealand adults doing?

According to the 2013/14 New Zealand Health Survey[21] (NZHS):

80 %

of adults had a drink containing alcohol in the past year. Men (83%) were more likely to drink than women (76%).

27 %

of young people aged 15–24 years were hazardous[22] drinkers.

More likely to be hazardous drinkers

- 16 percent of adults were hazardous drinkers. Men (21%) were more likely to be hazardous drinkers than women (11%).
- Māori adults were nearly twice as likely as non-Māori adults to be hazardous drinkers.
- Adults living in the most socioeconomically deprived areas were 1.4 times more likely to be hazardous drinkers than adults living in the least deprived areas.

21 The 2013/14 New Zealand Health Survey (Ministry of Health 2014a) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

22 Hazardous drinkers are those who obtain a score of 8 or more on the Alcohol Use Disorders Identification Test (AUDIT) developed by the World Health Organization. A score of 8 or more represents an established pattern of drinking that carries a high risk of future damage to physical or mental health (Ministry of Health 2014c).

When not to drink alcohol

The Ministry of Health advises women, who could be pregnant, are pregnant or are trying to get pregnant to stop drinking alcohol.

The reasons are that:

- there is no known safe level of alcohol use at any stage of pregnancy
- alcohol can harm an unborn baby (HPA 2014).

The Ministry of Health advises New Zealanders not to drink alcohol when they:

- are driving a vehicle or operating machinery
- have a condition that could be made worse by alcohol
- are on medication that interacts with alcohol
- feel unwell
- are under 18 years old
- are about to be physically active or play sport.

How to reduce the potential health impacts of drinking alcohol

To reduce the potential health impacts of drinking on health in the short and long term New Zealand adults should:

- know what a standard drink is
- set a limit on the number of alcoholic drinks consumed each day and each week
- drink low-alcohol or non-alcoholic drinks
- drink slowly
- eat before or while drinking alcohol or during consumption of alcoholic drinks
- switch between non-alcoholic and alcoholic drinks
- never drink and drive
- set a good example and do not get drunk (especially in front of children).

For more advice on low-risk drinking and information on standard drinks, go to the HPA's website: www.alcohol.org.nz

Eating Statement 5

Buy or gather, prepare, cook and store food in ways that keep it safe to eat

Reasons for the recommendation

Food safety is about making sure that food is safe to eat and does not make people sick.

- It is estimated that around 200,000 New Zealanders suffer a foodborne illness every year.
- Common causes of foodborne illness (food poisoning) are:
  - storing food for too long and at the wrong temperature before preparing it
  - cooking it at the wrong temperature (undercooking food and inadequately reheating cooked food)
  - cross-contaminating ready-to-eat foods with raw foods
  - using dirty surfaces to prepare food.
- Most foodborne illness is preventable.

Evidence to support this Statement and the more detailed advice below comes from:

- peer-reviewed scientific literature and reports published on the Ministry for Primary Industries (MPI) websites: www.foodsafety.govt.nz/science-risk and www.foodsmart.govt.nz
- other reference materials such as the Australian Dietary Guidelines evidence report.

Background

The term 'food safety' generally describes ways of handling, preparing and storing foods that prevent foodborne illness. Using these techniques as part of everyday food handling is the best way to keep food safe and avoid foodborne illness.

Micro-organisms, or bugs, that cause illness are called pathogens. These pathogens can be bacteria, fungi, parasites or viruses. Foodborne illness is any illness that results from eating foods contaminated with pathogens or their toxins. The most common health effects of foodborne illness are gastroenteritis, vomiting and/or diarrhoea. Foodborne illness can also cause longer-term illness or even death. Pathogens that most commonly cause a foodborne illness outbreak (which is when more than two cases of illness are linked to the same source) include norovirus, Camplyobacter spp, Giardia spp, Clostridium perfringens and Salmonella spp.

New Zealand's notifiable disease regulations cover a number of foodborne illnesses. For information on rates of foodborne illness, go to the Institute of Environment Science and Research Limited (ESR) Public Health Surveillance website: www.surv.esr.cri.nz

There are specific issues regarding food safety during pregnancy.
For more information see MPI's foodsmart website: www.foodsmart.govt.nz

Keeping food safe

Buy or gather, prepare, cook and store food in ways that keep it safe to eat.

When buying food and drink:

- always check the use-by date of each food before buying it
- avoid foods with damaged packaging – for example, dented or swollen tins, ripped packaging, broken seals
- choose undamaged and unripe (or just-ripe) fresh vegetables and fruit.

If gathering food:

- always wash food like pūhā and watercress thoroughly after gathering or buying from others who have gathered
- before gathering shellfish or other seafood, check with the local regional council, public health unit and the 'marine biotoxin alerts' on the Ministry for Primary Industries website (www.foodsmart.govt.nz) for information about any areas contaminated with algal blooms or other hazards.

When storing food:

- keep the fridge at or below 4 degrees Celsius
- store raw meat away from other food, for example, on the bottom shelf of the fridge so the raw meat juices do not drip onto other food
- follow storage advice on labels
- cover leftovers and store them in the fridge (within two hours of cooking) and use within two days of cooking.

When preparing and cooking food:

- always thoroughly wash hands with soap and water, and dry, before handling food or between handling raw meat and other food
- always prepare food on clean surfaces and utensils that have been cleaned with hot, soapy water
- reheat any leftovers until they are steaming hot before eating them
- be aware of food that is at higher risk of being contaminated by pathogens – for example, meat, chicken, fish, milk products, rice and legumes. For these foods:
  - store and cook them safely
  - if in doubt about the safety of the food, throw it out.

Further information and resources

The Ministry for Primary Industries is responsible for food safety in New Zealand.

Its food smart website (www.foodsmart.govt.nz) has useful information on ways to keep food safe. The information includes:

- key tips for consumers on food safety, such as the 3Cs (Clean, Cook and Chill)
- information for specific groups, such as pregnant women, babies and older people
- information and resources that may be of interest to Māori, Pacific peoples and other cultures, such as:
  - food safety practices in preparing and cooking a hāngi
  - Umu Pasifika – food safety for Pacific peoples
  - safe sushi
  - hunting, collecting, fishing and home kill.

Making good choices about what you eat and drink and being physically active are important to achieve and keep a healthy body weight

Reasons for the recommendation

In recent years, New Zealand's rate of obesity has been one of the highest in the OECD[23] (OECD 2014).

- The eating pattern described in Eating Statements 1, 2 and 3 is rich in the essential nutrients the body needs. It is linked with less weight gain (especially if the person eats foods that are low in energy density and is also physically active).
- If a person is a healthy weight, they are more likely to stay active and well. They are at lower risk of developing type 2 diabetes, heart disease, some cancers, osteoarthritis, sleep apnoea and fertility problems and are less likely to have a stroke.
- Excess body weight impacts on these diseases because it affects insulin resistance, blood glucose, blood lipids, blood pressure, hormone imbalances and pressure on joints.
- The first treatment option for losing weight or staying at a healthy body weight should involve a comprehensive lifestyle approach that includes diet, physical activity and behavioural strategies (such as the Food, Activity, Behaviour (FAB) approach) described in *Clinical Guidelines for Weight Management in New Zealand Adults* (Ministry of Health 2009).

What is meant by the terms overweight and obese?

Overweight and obese are when the body has abnormal or excessive fat that may harm health (WHO 2015c). Body mass index (BMI) is an index that calculates weight in relation to height to give a BMI score that is used to categorise body weight. To work out a person's BMI, divide their weight in kilograms by their height in metres squared (kg/m^2).

Figure 4: Body weight categories

$$\text{BMI} = \frac{\text{Body weight (kg)}}{\text{Height (m)}^2}$$

Body weight category	BMI score (kg/m2)	Risk of other diseases
Underweight	≤ 18.5	Low risk of other diseases due to body weight but at higher risk of other health problems
Healthy weight	18.5–24.99	Average risk
Overweight	25–29.99	Increased risk
Obese:	≥30	Substantially increased risk:
Obese (class I)	30–34.99	Moderate risk
Obese (class II)	35–39.99	Severe risk
Obese (class III)	≥40	Very severe risk

Source: Adapted from WHO (2000)

23 The Organisation for Economic Co-operation and Development (OECD) provides a forum for governments from its 34 member countries to work together on issues of economic, social and environment importance (www.oecd.org).

For example, to calculate the BMI of someone who is 1.81 metres tall and weighs 88 kilograms:

$$\frac{88}{3.3\ (1.81 \times 1.81)} = \textbf{BMI of 27 (overweight)}$$

Is a BMI 'healthy weight' the same for all adults?

The aim of setting BMI cut-off points is to identify people or populations at higher risk of health conditions linked with increasing BMI.

The health risks linked with increasing BMI begin at a BMI below 25 in all population groups and continue to increase as BMI increases. The WHO recommends using the same BMI cut-off points for all adults no matter what their age, sex or ethnicity is.

BMI is a useful population-level measure of who is overweight and the rate of obesity because it is relatively easy to measure. BMI does not differentiate between body weight due to muscle mass and body weight due to fat, so it is only a crude measure of body fatness at an individual level.

Waist circumference provides useful additional information, especially if it seems that people without a high BMI have excess intra-abdominal fat. Waist circumference is measured at the midpoint between the lowest rib and the iliac crest (hip).

Table 11: World Health Organization waist circumference thresholds

Risk of metabolic complications	Waist circumference threshold	
	Male	Female
Average risk	< 94 cm	< 80 cm
Increased risk	94–102 cm	80–88 cm
Substantially increased risk	> 102 cm	> 88 cm

Source: Adapted from WHO (2000)

Achieving and staying at a healthy weight

Being a healthy weight is about balancing energy intake with energy expenditure.

People gain weight when they consume more energy than they use. What a person eats and drinks and how much activity they do directly affect whether they gain, lose or stay the same weight.

To avoid gaining excess weight and to lose weight:

- choose nutritious foods that are low in energy (for example, with very little fat and no added sugar)
- drink plain water instead of sugary drinks and/or alcoholic drinks
- eat smaller portions of food
- sit less and move more
- be as active as possible.

For more information on the clinical assessment of who is overweight or obese and options for treating weight management, see the *Clinical Guidelines for Weight Management in New Zealand Adults* (Ministry of Health 2009) at www.health.govt.nz/publication/clinical-guidelines-weight-management-new-zealand-adults

For specific FAB tools and other FAB-related information for practitioners, go to: http://weightmanagement.hiirc.org.nz/

What are New Zealand adults doing?

In 2013/14, in New Zealand:

34 %

of adults[24] were a healthy body weight.

A further

35 %

were overweight.

A further

30 %

were obese.

Rates of obesity vary considerably between different ethnic and socioeconomic groups:

- Pacific (67%) and Māori (46%) adults were more likely to be obese
- Adults living in the most socioeconomically deprived neighbourhoods (44%) were more likely to be obese than adults living in the least deprived areas (21%).

x 3

Obesity rates in New Zealand adults have tripled in the last three decades to 30 percent in 2013/14.

(Ministry of Health 2014b)

BMI

High body mass index (BMI) has overtaken smoking as one of the leading risk factor for health loss.

(IHME 2013)

24 The 2013/14 New Zealand Health Survey (Ministry of Health 2014a) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

The Activity Statements

The Ministry of Health advises that, to live long and healthy lives, New Zealand adults should make regular physical activity part of their lifestyle. They should do a range of activities rather than just one type, as different types of activities are good for health in different ways. For example, aerobic activities are good for the heart, lungs and reducing the risk of developing various non-communicable diseases. In contrast, resistance activities are good for strengthening muscles, increasing lean body mass and reducing the risk of falls. Both aerobic and resistance activities can help improve insulin sensitivity (to varying degrees).

Around the world, physical inactivity is the fourth leading risk factor for non-communicable diseases and is estimated to cause between 3.2 million and 5 million deaths a year, as well as around 27 percent of type 2 diabetes, 30 percent of ischaemic heart disease and 21 to 25 percent of breast and colon cancer (WHO 2015b). This is why it is so important to be physically active.

Physical activity is influenced by the type, context, duration, frequency and intensity of activity. Together these factors are known as the 'five dimensions of physical activity' (see Figure 5). When health practitioners are recommending physical activity for health benefits, they should consider all of these dimensions.

Evidence

Support for the Activity Statements comes from a systematic graded review of evidence from the Australian Government's Department of Health. *The Development of Evidence-based Physical Activity Recommendations for Adults* (18–64 years) (Brown et al 2012) *(the Report)* was written in 2012 and released in 2014.

The Report summarises the scientific evidence on the relationship between physical activity and health. It also grades the level of evidence to support the Department of Health's Physical Activity Statements according to the NHMRC *Additional Levels of Evidence and Grades for Recommendations for Developers of Guidelines* (NHMRC 2009b).

The NHMRC quality rating system was applied to all the Activity Statements. The grades used are:

- 'convincing association', which indicates that the 'evidence can be trusted to guide clinical practice'
- 'probable association', indicating that the evidence 'can be trusted in most situations'
- 'suggestive association', where 'the body of evidence provides some support for the recommendations but care should be taken in its application' (NHMRC 2009b).

The Activity Statements

The five Activity Statements are:

1 Sit less, move more! Break up long periods of sitting.

2 Do at least 2½ hours of moderate or 1¼ hours of vigorous physical activity spread throughout the week.

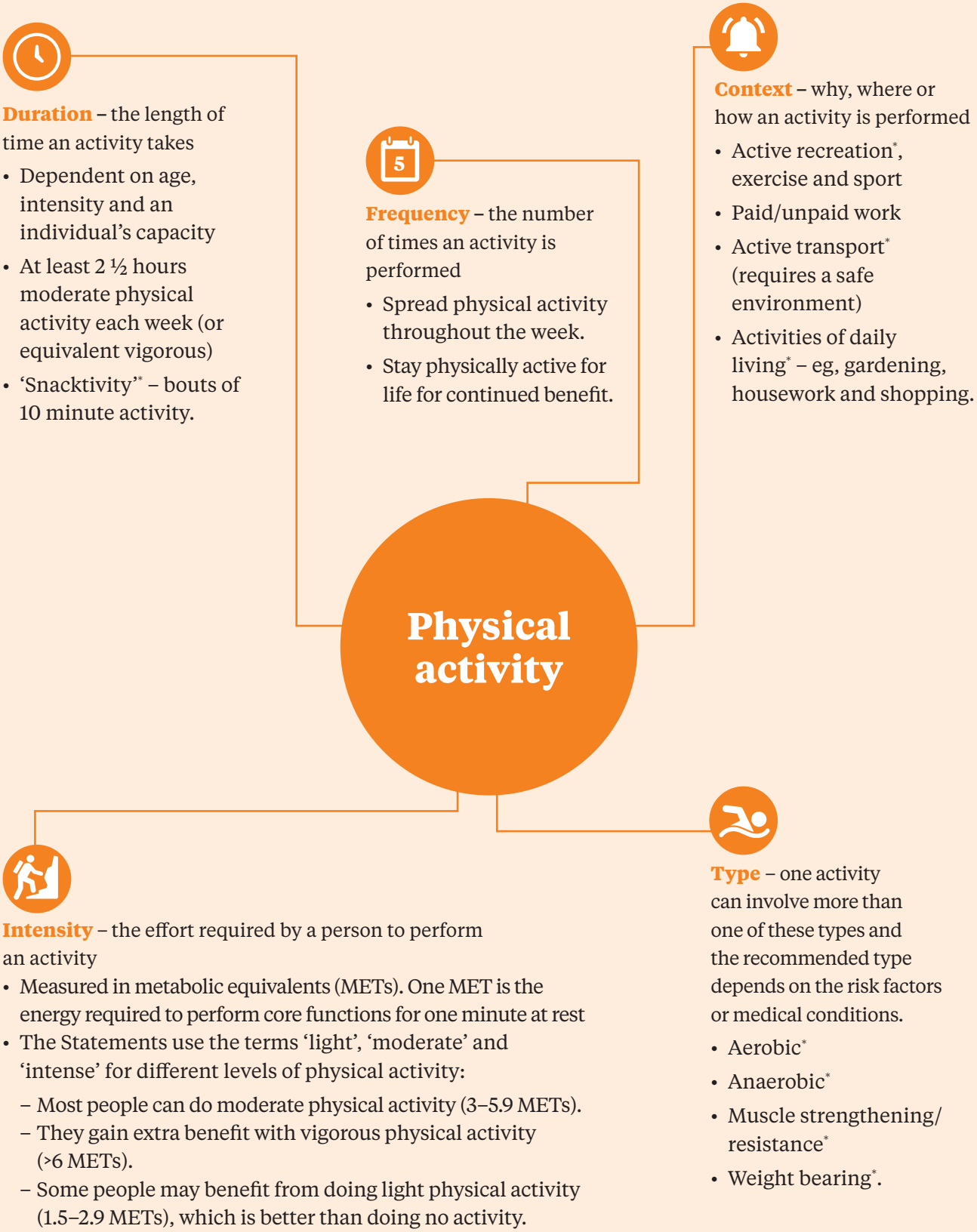
3 For extra health benefits, aim for 5 hours of moderate or 2½ hours of vigorous physical activity spread throughout the week.

4 Do some muscle strengthening activities on at least two days each week.

5 Doing some physical activity is better than doing none.

Together, the Activity Statements form the basis of a healthy activity pattern.

Figure 5: The five dimensions of physical activity



Source: Adapted from Ministry of Health (2001)

* See Glossary for a definition of these terms.

Activity Statement 1

Sit less, move more! Break up long periods of sitting

Reasons for the recommendation

Using the NHMRC quality rating system, the evidence for recommending sitting less and moving more was convincing.

The evidence indicates that sitting for long periods during waking time increases the risk of poor general health, type 2 diabetes and a range of weight-related health conditions such as obesity. Prolonged sitting increases insulin resistance and circulating blood sugar levels, and may increase the risk of type 2 diabetes independently of physical activity.

- People who sit for less than eight hours a day in total are more likely to have better health outcomes than those who sit for more than eight hours a day.

Sitting for less time can improve a person's health, even if they are already physically active.

- Sitting for long periods increases the risk of developing non-communicable diseases. Its effect is independent of the time a person spends being physically active.
- Doing 2½ hours of physical activity each week may not be enough to offset the negative effects of prolonged sitting time.

There is not enough evidence to identify the effect of too much sitting on cancer, cardiovascular disease and depression.

(Brown et al 2012)

Background

Over the past few decades, New Zealanders have increasingly spent less time being physically active and more time sitting. There are many reasons why people are sitting for longer, including the built environment, transport, technology (computers, laptops, tablets, smartphones, television, DVD, internet and e-readers) and individual preferences. Social norms and the physical environment reinforce these influences. For example, tables and chairs laid out for meetings, office and call centre desks, and theatre, cinema and stadium seating may encourage people to sit more (Owen et al 2011).

Breaking up periods of sitting with regular movement throughout the day is important for good health. People should take regular breaks from sitting in addition to doing 2½ hours of moderate physical activity each week.

Sit less and move more

The benefits for health begin as soon as a person starts moving:

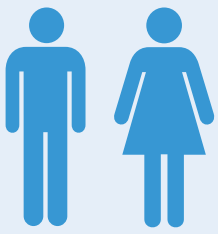
- view standing and moving as an opportunity, not an inconvenience
- replace sitting with gentle physical activity such as standing and walking.

What are New Zealand adults doing?

Among New Zealand adults (aged 18–64 years), between 2002 and 2004:

4 Hrs

People sat on average for four hours a day in total.



Sitting times for men and women were not significantly different.

Higher levels of sitting

Younger, higher educated and less physically active adults.

(Bauman et al 2011)

How to reduce sitting time

- Break up sitting time throughout the day for at least a few minutes every hour, preferably more frequently.
- Limiting the time spent sitting in front of a screen gives more time for physical activity.

At work/study

Break up long periods of sitting by standing up to stretch regularly. Stand during meetings, when taking phone calls or when reading; walk to talk to colleagues instead of phoning, texting or emailing them; and take regular standing breaks from driving. Using a height adjustable table allows for changing between standing and sitting.

Travelling

Where possible, replace regular car journeys with public transport or active transport. Try walking, cycling or scooting short trips. Reduce sitting time during travel by standing on buses, trains and ferries. Get off the bus/train one stop earlier and walk the rest of the way. Take regular breaks when travelling in a car or on a motorbike.

Leisure

Limit television, computer use or other seated activities when at home. During leisure time, turn off the TV/computer/other screen and go for a walk. Stand up and stretch when the advertisement breaks come on TV. Stand up while fishing, preparing food, checking emails or making phone calls.

What about people with physical disabilities?

Some people may not be able to stand due to their health condition, such as people who use wheelchairs or who have limited mobility. For these people, the focus should be on doing regular chair-based activities such as arm cranking, wheelchair circuits, wheeling with friends and wheelchair sports or programmes such as 'Sit and Be Fit' or 'Chairobics'. These activities increase the heart rate and breathing as well as strengthening muscles.

For more advice on sitting less, moving more, refer to the Useful Links section near the end of this document.

What about seated activities?

Seated activities that use up a lot of energy such as waka ama/oe vaka, rowing and cycling are excellent ways to get moving and can reduce the risk of developing poor health. These seated activities can help to reduce the risk of type 2 diabetes and becoming overweight or obese. In addition, lower limb movements can help offset the negative health effects of prolonged sitting.

Activity Statement 2

Do at least 2½ hours of moderate or 1¼ hours of vigorous physical activity spread throughout the week

Reasons for the recommendation

Using the NHMRC quality rating system, there is:

- convincing evidence for the recommendation to do at least 2½ hours of moderate or 1¼ hours of vigorous physical activity each week
- probable evidence for the recommendation to spread physical activity throughout the week.

(Brown et al 2012)

Doing regular physical activity[25] helps to reduce the risk of developing type 2 diabetes (whether or not you lose weight), colon/endometrial/postmenopausal breast cancer, anxiety, depression and stress. It can also help people diagnosed with these conditions to manage them.

Regular physical activity also reduces the risk of dying early from any cause.

Spreading physical activity across the week has the greatest health benefits.

There is growing evidence that people can get extra health benefits (for example, a reduced risk of heart disease) by doing some vigorous physical activity rather than just moderate physical activity.

(Brown et al 2012)

Background

A finding from a worldwide study shows that physical inactivity is associated with 12.7 percent of all deaths in New Zealand. Physical inactivity also contributes to 7.9 percent of heart disease, 9.8 percent of type 2 diabetes, 13.1 percent of breast cancer and 14.1 percent of colon cancer (Lee et al 2012)

Why be physically active?

Regular physical activity:

- improves the function of the heart, lungs and muscles, improves mental health and makes it easier to do activities of daily living (eg, vacuuming, washing the car and shopping)
- improves sleep, wellbeing and quality of life
- increases levels of social interaction if the physical activity is done with friends, whānau or others.

Why should people spread activity throughout the week?

Any physical activity is good for health, but even more health benefits are gained from being physically active every day, rather than doing it all on one or two days each week. Regular physical activity can be:

- achieved by doing at least 30 minutes of moderate or 15 minutes of vigorous physical activity on five days each week or an equivalent combination of both
- broken up into smaller more frequent and manageable chunks such as 10 minutes at a time (known as ‘snacktivity’).

25 Regular physical activity is doing at least 2½ hours of moderate physical activity or 1¼ hours of vigorous physical activity or an equivalent mix of moderate and vigorous physical activity spread throughout the week.

How much physical activity do people need to stay healthy?

The exact amount of physical activity needed for good health varies between individuals. However, doing 2½ hours of moderate physical activity (or the equivalent in vigorous activity) each week is the minimum recommended amount for achieving health benefits. This recommendation is based on epidemiological evidence on frequency, duration and intensity.

For more advice on being physically active, refer to the Useful Links section near the end of this document.

What are the best physical activities to do?

Aerobic activities are great for the heart, lungs, overall fitness and wellbeing.

Any physical activity that raises the heart rate and makes breathing harder than normal is good for health, no matter what a person's level of fitness is to begin with. For example, walking is a great physical activity for most adults. It increases fitness, costs little or nothing, is low impact on the joints and has a low injury rate, can be done almost anywhere, does not require specialist equipment and can help to achieve all of the Activity Statements.

See Appendix 4 for a more detailed list of activities that can be done for overall health and wellbeing and Appendix 5 for popular activities for New Zealand adults.

What are New Zealanders doing?

Among New Zealand adults[26] in 2013/14:

51 %

did at least 30 minutes of moderate activity or equivalent[27] spread over 5 or more days in the last week.

Less likely to be physically active

Asian and Pacific peoples were less likely to be physically active than non-Asian and non-Pacific peoples.

Less likely to be physically active

People in the most socioeconomically deprived areas were less likely to be regularly physically active than those in the least deprived areas.

More likely to be physically active

Men were more likely to be regularly physically active than women across all age groups.

26 The 2013/14 New Zealand Health Survey (Ministry of Health 2014a) provides data from adults aged 15 + years. The Eating and Activity Guidelines define adults as 19–64 years.

27 One minute of vigorous activity is equivalent to two minutes at moderate intensity.

Activity Statement 3

For extra health benefits, aim for 5 hours of moderate or 2½ hours of vigorous physical activity spread throughout the week

Reasons for the recommendation

Using the NHMRC quality rating system, there is:

- convincing evidence for the recommendation to do at least 5 hours of moderate or 2½ hours of vigorous physical activity each week for extra health benefits
- probable evidence for the recommendation to spread physical activity throughout the week.

(Brown et al 2012)

New Zealand adults can achieve extra health benefits by doing 5 hours of moderate, 2½ hours of vigorous or equivalent mix of moderate and vigorous physical activity each week. For example, they can achieve an even greater:

- reduction in the risk of developing type 2 diabetes
- reduction in the risk of gaining excess weight
- reduction in depressive symptoms and anxiety
- an increase in quality of life/wellbeing.

The evidence also shows that doing more than 5 hours of moderate (or 2½ hours of vigorous) physical activity can help prevent and manage some cancers. This evidence is:

- convincing for colon and postmenopausal breast cancer
- probable for endometrial cancer
- suggestive for pre-menopausal breast, lung and ovarian cancer.

(WCRF and AICR 2007; Brown et al 2012)

Generally, people can gain extra health benefits by increasing what they do in one or more of the five dimensions of activity described in Figure 5. This can be achieved through increasing the length or intensity of activity sessions or by doing more sessions.

Background

Most New Zealand adults who participate in sport and recreation do so for health and fitness reasons (91%). Other reasons why people participate in sport and recreation include enjoyment (88%) and social aspects (53%). Compared with all participants in the survey, Māori reported cultural reasons as one of the most significant motivators to participate. For Pacific peoples, it was sporting performance (Sport New Zealand 2015).

What are the best activities to do?

To achieve extra health benefits, people need to do activities that are suitable for overall health and wellbeing (ie, those needed to achieve Activity Statement 2), but for longer, more often, or at a higher intensity.

One way to achieve this is through High-Intensity Intermittent [or Interval] Training (HIIT). HIIT is short periods of vigorous intensity activity with a brief recovery period in between. HIIT can be an efficient use of time and is good for health as it can improve aerobic and anaerobic fitness, strength, power and speed. It can also increase heart health and insulin sensitivity and reduce blood pressure, cholesterol and abdominal fat.

Consider:

- joining a club
- training for an event
- setting personal goals
- improving skills through practice
- encouraging others to participate.

See Appendix 4 for examples of activities that help people to gain extra health benefits and Appendix 5 for popular activities for New Zealand adults.

For more advice on gaining extra health benefits, refer to the Useful Links section near the end of this document.

What are New Zealand adults doing?

Among New Zealand adults[28] in 2013/14:

46 %

did at least 5 hours of moderate activity or equivalent[29] spread over 5 or more days in the last week.

More likely to be very physically active

Men were more likely to be very physically active[30] than women from the same age group.

Less likely to be very physically active

Asian and Pacific peoples were less likely to be very physically active than non-Asian and non-Pacific peoples.

(Ministry of Health, additional data from the NZHS, personal communication, 16 March 2015)

28 The 2013/14 New Zealand Health Survey provides data from adults aged 15 + years. The Eating and Activity Guidelines define adults as 19–64 years.

29 One minute of vigorous activity is equivalent to two minutes at moderate intensity.

30 'Very physically active' means an adult does at least 60 minutes of moderate or 30 minutes of vigorous physical activity on five days each week, or an equivalent combination of both.

Activity Statement 4

Do muscle strengthening activities on at least two days each week

Reasons for the recommendation

Using the NHMRC quality rating system, there is either convincing or probable evidence for the recommendation to do some muscle strengthening activities on at least two days each week.

Regular muscle strengthening and weight bearing activities help to reduce the risk of developing metabolic syndrome, pre-diabetes, osteoporosis and osteoarthritis and of having falls and fractures.

Muscle strengthening activities can be useful in the management of osteoporosis and osteoarthritis.

(Brown et al 2012)

Background

Muscle strengthening activities help to keep the body strong and agile for doing everyday activities such as walking, hanging the washing out, gardening and carrying shopping. Muscle strengthening activities should be done in addition to aerobic activities.

People should do specific muscle strengthening activities to target all five major muscle groups (arms, legs, chest, abdominals and back) on two or more days each week (WHO 2010).

What are the best activities to do?

Any physical activity that provides resistance to the muscles will maintain or increase muscle strength, mass, power and endurance.

Many people believe that doing muscle strengthening activities means going to the gym to lift weights. However, there are plenty of other ways to strengthen muscles. For example:

- do push-ups, sit-ups and squats at home and at no cost
- carry children or heavy bags of shopping
- try waka ama/oe vaka, rock climbing, aqua aerobics/aqua jogging, walking up hills, climbing stairs, digging in the garden.

Weight bearing impact activities such as walking, running, jumping and rope skipping are good ways of strengthening muscles and bones.

Aerobic activities with an element of resistance

Aerobic activities such as swimming, walking up hills and cycling up hills or into a head wind can strengthen muscles as they include an element of resistance.

See Appendix 4 for a list of activities that can be done to improve muscle and bone strength and Appendix 5 for popular activities for New Zealand adults.

For more advice on doing some activity, refer to the Useful Links section near the end of this document.

What are New Zealand adults doing?

Not enough data on muscle strengthening activities performed by New Zealand adults are available to describe the New Zealand situation.

Activity Statement 5

Doing some physical activity is better than doing none

Reasons for the recommendation

Using the NHMRC quality rating system, there is convincing evidence for the recommendation that doing some physical activity is better than doing none.

Doing any physical activity is beneficial for health.

- Generally the more light activity and the less sitting a person can do, the better it is for their health.
- A person benefits more when they do moderate activity as well, even if that moderate activity is less than the 2½ hours recommended in Activity Statement 2.

(Brown et al 2012)

Activities of daily living such as housework are usually light physical activity.

- Although these activities will not be enough to meet the recommended 2½ hours of moderate physical activity each week, they will provide some benefits to overall health.
- Importantly, activities of daily living can replace sitting time.

Background

"The benefits of regular physical activity to health, longevity, wellbeing and protection from serious illness have long been established. They easily surpass the effectiveness of any drugs or other medical treatment. The challenge for everyone, young, old and alike is to build these benefits into their daily lives"

(UK Department of Health 2009).

Proportionally, a person who is less physically active to start with makes greater health gains when they increase their physical activity than a person who is already more active. Even small, sustained increases in physical activity can improve health.

What about people with other health conditions?

People with health conditions such as morbid obesity or heart conditions should check with a health practitioner or physical activity specialist to identify appropriate activities for them.

A Green Prescription is one example of a service that can provide personal advice and support on becoming more physically active as part of managing an individual's health. A doctor, practice nurse or other health practitioner who has access to the patient's full medical history can give a Green Prescription.

For more advice on the Green Prescription programme, go to: www.health.govt.nz/our-work/preventative-health-wellness/physical-activity/green-prescriptions

What are New Zealand adults doing?

Among New Zealand adults[31] in 2013/14:

14 %

did little or no physical activity (less than 30 minutes in total) in the last week.

More likely to have done little or no physical activity

Women were more likely than men to have done little or no physical activity in the past last week.

More likely to have done little or no physical activity

People living in the most socioeconomically deprived areas were more likely to do little or no physical activity compared with people in the least deprived areas.

31 The 2013/14 New Zealand Health Survey (Ministry of Health 2014a) provides data from adults aged 15 + years. The Eating and Activity Guidelines define adults as 19–64 years.

Be social

People benefit from physical activity when they do it alone, but they may gain even more benefit when they do it with others. Regular physical activity with family, whānau and friends:

- is good for overall health and can motivate people to stay active
- can reduce the feeling of social isolation and increase social contact with people, which helps to reduce stress levels and increase psychological wellbeing (although the benefits may take time to build up)
- can have positive effects on the health of individuals and communities when people see it as a regular and normal thing to do.

Keep physical activity fun and varied

Try to make physical activity fun and sustainable as this makes regular participation more likely (especially when doing it for longer).

- Change routes and routines every now and then to help avoid boredom.
- Use walking tracks, parks and hills or try a new physical activity or sport.
- Swim at the beach or the river.
- Walk with family, whānau and friends.
- Break up physical activity into smaller, more manageable chunks (known as 'snacktivity').

Isn't physical activity hard work?
Doing some physical activity doesn't need to be hard.

People are more likely to do physical activities regularly when they are enjoyable and easy to add to their daily routine. For example, people can add some physical activity into their daily life by:

- playing actively with their children or grandchildren
- walking, cycling or riding a scooter to places such as work, church, shops, the library, sports training or the fruit and vegetable market
- turning on the music and dancing
- taking the stairs instead of the lift
- doing active jobs around the house such as cleaning, vacuuming, gardening, hanging the washing on the line, mowing the lawn or do-it-yourself (DIY).

See Appendix 4 for a list of light activities that provide some of the benefits of physical activity and Appendix 5 for popular activities for New Zealand adults.

For more advice on doing some physical activity, refer to the Useful Links section near the end of this document.


All In
GD
GD

Safety considerations for physical activity

No physical activity is completely risk free. However, the health benefits of being physically active generally outweigh the risks.

Taking appropriate actions before, during and after physical activity can help to reduce the chances of injury and illness.

Simple ways of reducing the risk of injury and illness during physical activity are to:

- be safe, visible, aware and sun smart – wear appropriate clothing and be physically active in safe, well-lit areas
- use appropriate safety equipment for the activity or sport you are doing
- drink an appropriate amount of plain water
- avoid alcohol immediately before, during and immediately after physical activity.

If people have an existing health condition or have been inactive, they should start off slowly and gradually build up to the physical activity levels recommended in the Activity Statements.

Sport and recreation injuries

Low-impact, non-contact activities such as walking, gardening, aqua jogging, aqua aerobics, swimming and golf produce fewer injuries than contact sports (Brown et al 2012; ACC 2014). Adults who have previously injured themselves are also at higher risk of getting another injury than those who have not (ACC 2014).

Most injuries are preventable by improving fitness, warming up, stretching and cooling down properly, and by taking appropriate safety precautions when preparing for physical activities (ACC 2014).

People who are considering playing sports should visit the Accident Compensation Corporation (ACC) website. It has a SportSmart plan for reducing the risk of common sporting injuries – www.acc.co.nz/preventing-injuries/playing-sport/sportsmart-10-point-plan

According to Australia's *Development of Evidence-based Physical Activity Recommendations for Adults (18–64 years)* (Brown et al 2012), generally people who are moderately active on a regular basis have a lower risk of having a heart attack than those who do little or no physical activity. However, it is important to note that, although the chances are very small, people have a higher risk of sudden death or heart attack during vigorous physical activity (Brown et al 2012). Therefore, if people have not been physically active for some time (or ever) and wish to do vigorous physical activity, they should speak to an appropriately trained health practitioner for advice on how to be safe during physical activity.

Useful links

Below are some suggested websites to look for more information. It is not an exhaustive list and many more useful websites may be found.

Cultural competency

- www.health.govt.nz
- www.learnonline.health.nz/login/index.php
- www.caldresources.org.nz

Māori

- www.health.govt.nz/our-work/populations/maori-health
- www.sportsground.co.nz/ironmaori
- www.toitangata.co.nz

Miscellaneous

- www.health.govt.nz/our-work/preventative-health-wellness/healthy-families-nz

Nutrition

- www.health.govt.nz/our-work/preventative-health-wellness/nutrition
- www.healthed.govt.nz (Ministry of Health education resources website)
- www.health.govt.nz/our-work/eating-and-activity-guidelines/healthed-resources-eating-and-activity
- www.ana.org.nz (Agencies for Nutrition Action)
- www.cancernz.org.nz/reducing-cancer-risk
- www.dietitians.org.nz
- www.heartfoundation.org.nz
- www.hpa.org.nz/what-we-do/nutrition-and-physical-activity
- www.nutritionfoundation.org.nz
- www.who.int/nutrition

Pacific peoples

- www.health.govt.nz/our-work/populations/pacific-health
- www.heartfoundation.org.nz/programmes-resources/pacific-health

People with disabilities

- www.halberg.co.nz
- www.paralympics.org.nz/members

Physical activity

- www.health.govt.nz/your-health/healthy-living/food-and-physical-activity/physical-activity
- www.health.govt.nz/your-health/healthy-living/food-and-physical-activity/physical-activity/activity-guides
- www.health.govt.nz/our-work/eating-and-activity-guidelines/healthed-resources-eating-and-activity
- www.acc.co.nz
- www.arthritis.org.nz/resources
- www.bikewise.co.nz
- www.doc.govt.nz
- www.exercisenz.org.nz
- www.heartfoundation.org.nz/healthy-living/exercise-and-fitness
- www.hpa.org.nz/what-we-do/nutrition-and-physical-activity
- www.localcouncils.govt.nz
- www.newzealanders.org/directory/community/recreation
- www.nzcycletrail.com
- www.nzrecreation.org.nz
- www.sportnz.org.nz
- www.sportnz.org.nz/about-us/who-we-are/how-we-invest/regional-sports-trusts
- www.teararoa.org.nz
- www.watersafety.org.nz
- www.who.int/topics/physical_activity/en
- www.who.int/mediacentre/factsheets/fs385/en

Safety

- www.acc.co.nz/preventing-injuries/playing-sport/index.htm
- www.nzta.govt.nz

Glossary

Active recreation in this document refers to non-competitive activities undertaken for the purpose of wellbeing and enjoyment. Active recreation requires physical exertion above resting level and therefore excludes passive recreational activities such as watching TV, reading and sitting.

Active transport is the use of physical activity to travel from one place to another, eg, walking or cycling.

Activities of daily living (also called incidental activities) are light, everyday activities that people do as part of the normal day. Examples are vacuuming, washing the car and shopping.

Aerobic activities are continuous and rhythmic movement of the major muscles for a sustained period (10 minutes or more). Aerobic activity requires the heart to pump oxygenated blood round the body to the muscles for them to work for a sustained period of time.

Anaerobic activities are short, fast bursts of high intensity activity that do not require oxygen to the muscles. A by-product of anaerobic activity is the build-up of lactic acid in the muscles. Anaerobic activities are used to increase strength, speed and power include sprinting and weight lifting.

Built environment includes roads, pavements, cycle lanes, buildings, structures, gardens, sports fields, parks and other open spaces built or modified by humans to work, live and play in. The built environment (or lack of) is an essential factor affecting the walkability and bikeability of towns, cities and rural areas.

Carbohydrates are a large group of organic compounds made by plants. They are a form of stored energy and are found in food and some living tissue. Examples are sugars, starch and cellulose.

Cardiovascular disease affects the heart or blood vessels. It includes ischemic heart attack, peripheral vascular disease, and stroke.

Carotenoids are phytochemicals (plant chemicals) that are found in vegetables and fruit, providing their red and yellow pigments. Many are precursors of vitamin A and are plant sources of the vitamin.

Dietary pattern is the quantity, proportion and variety or combination of different foods, drinks and nutrients (when available) that a person has in their diet and how often the person usually consumes them.

Essential fatty acids are fatty acids needed for good health, but because they cannot be made in the body people need to get them from their diet. They include alpha-linolenic acid (omega-3) and linoleic acid (omega-6).

Essential nutrients are substances that people must get from their diet because the body cannot make enough of them to meet its needs.

Exercise is a subcategory of physical activity that is planned, structured and repetitively performed to improve or maintain physical fitness, physical performance or overall health.

Fast food is commercially prepared, processed food served in snack bars or restaurants as a quick meal or taken away.

Fatty acid is a component of fat that is an even-numbered chain of carbon atoms with hydrogen atoms attached, with a methyl group at one end and a carboxylic acid group at the other. Fatty acids are classified as short chain (fewer than 8 carbons), medium chain (8–12 carbons) and long chain (14 or more carbons).

Food reformulation programmes are where manufacturers of food products adjust their product recipes to make them healthier (usually by decreasing saturated fat, sugar or salt content) while still keeping their consumer appeal.

Hāngi is a traditional Māori method of cooking where food is placed on top of heated rocks in a pit oven, covered with wet cloths then buried with soil to cook.

Healthy weight is commonly defined as a body mass index of 18.5 to 24.99 kg/m^2.

Hydrogenation is a process that adds hydrogen atoms to the double bonds of unsaturated fatty acids to increase the degree of saturation of the fatty acid in fat or oil. This increases the melting point of the fat. Manufacturers can use this process to change fat texture in food products and make them last longer.

Intense sweeteners (also known as artificial sweeteners) are a type of food additive that provides little or no energy (kilojoules). Intense sweeteners permitted for use in New Zealand include aspartame, sucralose and stevia.

Inulin is a type of fibre. It is a group of naturally occurring polysaccharides (many glucose molecules linked together) produced by plants.

Intensity is the energy required by a person to perform a physical activity. Intensity is often defined using the metabolic equivalent of a task (MET).

- **Light-intensity activities** (1.5–2.9 METs) require a person to stand up and move around but do not increase the breathing and heart rate significantly. Examples are activities of daily living such as light housework, light DIY and shopping.
- **Moderate-intensity activities** (3–5.9 METs) make breathing harder than normal but a person should still be able to talk while doing them. Examples are brisk walking on flat ground, cycling (< 16 km/h), playing with children, dancing and kapa haka.
- **Vigorous-intensity activities** (> 6 METs) make breathing a lot harder than normal and a person would not be able to talk easily while doing them. Examples are brisk walking uphill, fast cycling (> 16 km/h), running, fast swimming, and team sports (such as netball, touch, rugby and football).

Legumes are the edible seed from the Leguminosae family (Fabaceae). Examples are dried beans, peas, soya beans and lentils. Peanuts are also legumes.

Metabolic equivalents (METs) are a way of measuring how much energy people use, defined as the ratio of metabolic rate (and therefore the rate of energy consumption) during a specific physical activity to a reference metabolic rate. One MET is the energy a person needs to perform core functions for one minute at rest, such as breathing and pumping blood round the body.

Metabolic syndrome is the name for a group of risk factors for heart attack. The risk factors include diabetes and pre-diabetes, obesity, high cholesterol and high blood pressure (IDF 2006).

Muscle strengthening activities (or resistance activities) involve creating resistance to muscle movement in order to help increase skeletal muscle strength, power, endurance and muscle mass.

Nutrients are substances that give the body the nourishment it needs to live and grow.

Obesity is commonly separated into three classes (WHO 2000):

- **Class 1** defined as a body mass index of 30 to 34.99 kg/m^2
- **Class 2** defined as a body mass index of 35 to 39.99 kg/m^2
- **Class 3** defined as a body mass index of ≥40 kg/m^2.

Occupational activities are physical activities that people do as part of their work. They can help prevent health conditions and improve general health and may count towards achieving the weekly level of physical activity recommended.

Omega-3 fatty acids are poly-unsaturated fatty acids found in oily fish, vegetable oils, nuts and seeds. Common omega-3 fatty acids in the body are alpha-linolenic acid, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Omega-6 fatty acids are poly-unsaturated fatty acids found in vegetable oils, nuts and seeds. Common omega-6 fatty acids in the body are linoleic acid and arachidonic acid.

Osteoarthritis is a gradual loss of cartilage in the joints, which can lead to pain and inflammation.

Osteoporosis is a thinning of the bones (or 'porous' bones) resulting from a loss of bone density.

Overweight is weight above the weight that is considered healthy. Overweight is commonly defined as a body mass index of 25 –29.99 kg/m^2.

Physical activity is any bodily movement produced by the skeletal muscles that use energy above resting level. It may be general movement or more planned, structured or repetitive movement such as exercise.

Physical inactivity in this document is defined as doing less than 30 minutes of activity each week (as defined in the NZHS). An important consideration to note is that physical inactivity is not the same as sedentary behaviour (as defined later).

Phytonutrients are bio-active chemicals in plant foods that are beneficial for health. Examples are antioxidants and bioflavonoids.

Polydextrose is a manufactured chain of glucose molecules linked together that is classified as a fibre.

Polysaccharides are long chains (≥ 10) of molecules of monosaccharides (glucose, fructose, galactose) linked together. They are classified as either starch (eg, amylose, amylopectin) or non-starch polysaccharides (eg, cellulose, pectin).

Povi masima is Samoan for salted or corned beef.

Pre-diabetes includes people with haemoglobin A1c (HbA1c) levels in the range of 41–49 mmol/mol.

Proteins are organic compounds that consist of large molecules of one or more long-chain amino acids. Proteins are part of all living organisms and provide structural components of body tissue such as muscle and hair and functional components like enzymes and antibiotics.

Pulu masima is Tongan for salted or corned beef.

Saturated fat is a fat or fatty acid that has no double bonds between the carbon atoms of the fatty acid chain. It is found in the fat of animal products such as milk, cream, butter, cheese and meat, as well as in coconut and palm oil (used in manufactured foods such as pies, biscuits, cakes and pastries).

Sedentary behaviour refers to any waking activity characterised by an energy expenditure ≤ 1.5 METs and a sitting or reclining posture.

'Sit and Be Fit' and 'Chairobics' are sit-down exercise classes that use low-impact aerobic routines to meet the physical activity needs of people with limited movement.

'Snacktivity' is a term to define activity that is broken up into smaller, more frequent and manageable chunks such as 10 minutes at a time.

Structured activities are physical activities or exercises that a club or individual has organised such as group exercise activities and competitive sports.

Umu is a traditional Pacific method of cooking where food is placed on top of hot rocks, then covered with green banana leaves or other materials and left to cook.

Unsaturated fat is a fat or fatty acid in which there are one or more double bonds between carbon atoms of the fatty acid chain. Such fat molecules are: mono-unsaturated if each contains one double bond; and poly-unsaturated if each contains more than one double bond.

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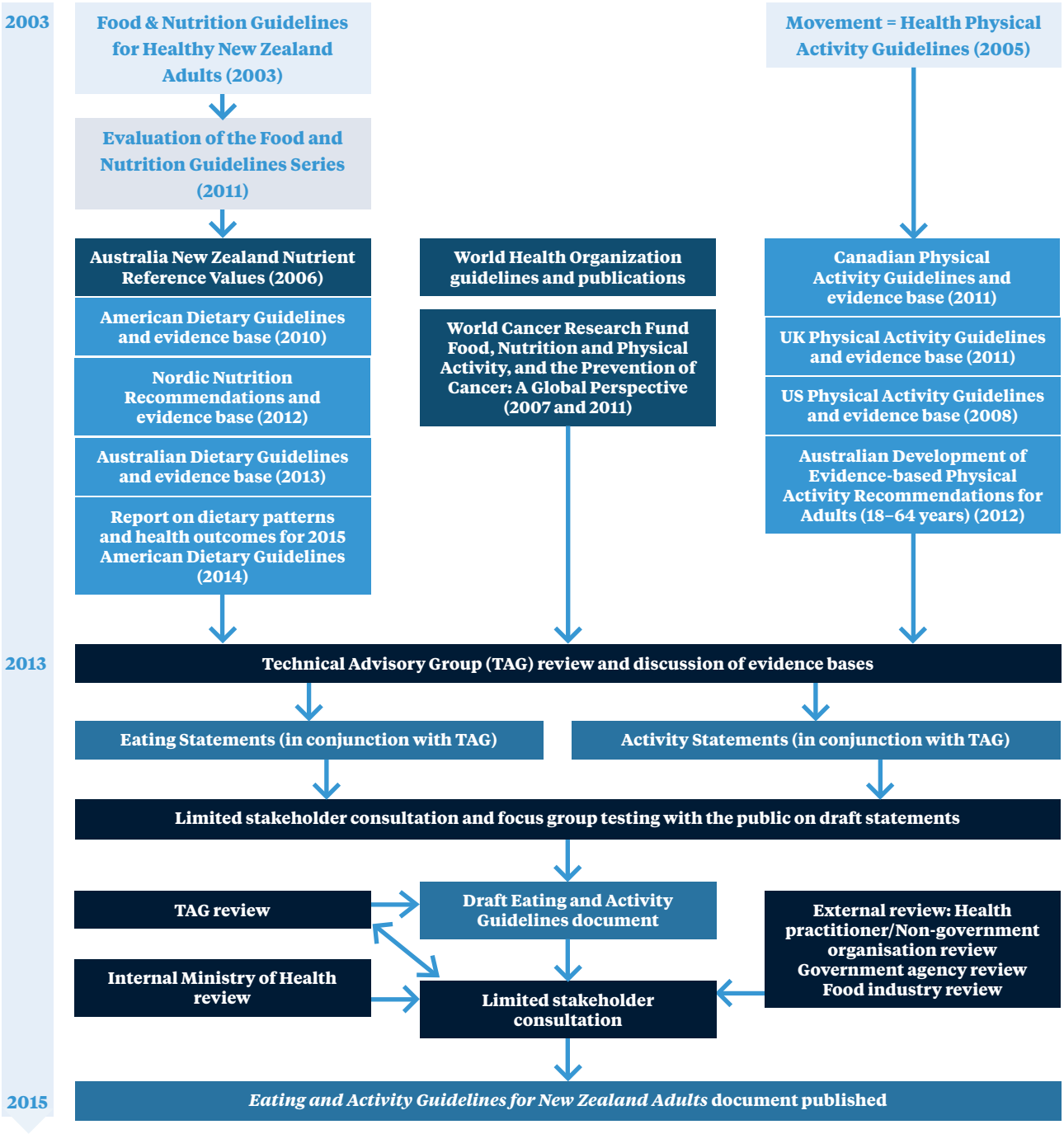
Appendix 1

How the *Eating and Activity Guidelines for New Zealand Adults* document was developed



Appendix 2

Evidence for the Eating and Body Weight Statements

The various evidence reports used different methodologies and their evidence comes from associations between health outcomes and specific foods and overall eating patterns. The combined evidence for each statement is described in the Reasons for the recommendation section.

For more specific and detailed information on the evidence supporting the Eating Statements, see the following documents and websites.

American Dietary Guidelines 2010

(US Department of Agriculture and US Department of Health and Human Services 2010)

- Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for American, 2010, to the Secretary of Agriculture and Secretary of Health and Human Services (DGAC 2010)
- www.health.gov/dietaryguidelines

Nordic Nutrition Recommendations 2012

(Nordic Council of Ministers 2014) – Chapter 5: Food, food patterns and health outcomes – Guidelines for a healthy diet (pages 103–135)

- www.norden.org/en/theme/tidligere-temaer/themes-2014/nordic-nutrition-recommendation/publications

Australian Dietary Guidelines 2013 (NHMRC 2013)

- A review of the evidence to address targeted questions to inform the revision of the Australian Dietary Guidelines (NHMRC 2011)
- www.eatforhealth.gov.au

Paper to inform American Dietary Guidelines 2015

- A Series of Systematic Reviews on the Relationship between Dietary Patterns and Health Outcomes 2014 (US Department of Agriculture 2014)
- www.nel.gov/publications

World Cancer Research Fund Report 2007

(WCRF and AICR 2007) and

Continuous Update Programme

(WCRF and AICR 2011)

- www.dietandcancerreport.org/cancer_prevention_recommendations
- www.dietandcancerreport.org/cup/report_overview

World Health Organization (WHO) reports

- Diet, Nutrition and the Prevention of Chronic Diseases (WHO 2003)
- Guideline: Sodium intake for adults and children (WHO 2012a)
- NCD Global Action Plan (WHO 2013)
- Guideline: Sugar intake for adults and children (WHO 2015a).

Nutrient Reference Values for Australia and New Zealand (NHMRC 2006)

- www.health.govt.nz

The evidence bases for Eating Statement 4 on alcohol and Eating Statement 5 on food safety are highlighted under those specific sections in this document.

Appendix 3

Food groups and the nutrients they provide

The Food and Nutrition Guidelines Statements refer to the four food groups. The information below describes each food group, states the recommended number of servings and serving sizes and lists the main nutrients supplied.

Vegetables and fruit (includes fresh, frozen and canned)

Advice

Eat at least 5 servings a day: at least 3 servings of vegetables and at least 2 servings of fruit

Serving size examples

Vegetables

½ cup cooked vegetable eg, pūhā, watercress, silverbeet, kamokamo (squash), carrot, broccoli, bok choy, cabbage or taro leaves

½ cup salad or mixed vegetables

1 medium potato (135 g) or similar sized piece of kūmara, taewa (Māori potato), yam (Pacific or NZ), taro, cassava, or green banana (technically a fruit)

Fruit

1 medium apple, pear, banana or orange

2 small apricots or plums

½ cup fresh fruit salad

½ cup stewed or canned (in juice)

Nutrients provided

Carbohydrates

Dietary fibre

Vitamins: especially folate, pro-vitamin A (carotenoids) (yellow and green vegetables) and vitamin C (dark-green vegetables and most fruit, potatoes)

Minerals: potassium, magnesium

Grain foods, mostly whole grain and those naturally high in fibre (includes some breakfast cereals, breads, rice and pasta)

Advice

Eat at least 6 servings a day

Serving size examples

1 whole-grain bread roll

1 sandwich slice whole-grain bread

½ cup muesli

½ cup cooked porridge

1 cup cooked pasta

1 cup cooked rice

Nutrients provided

Carbohydrates

Dietary fibre

Protein

Vitamins: all B group (except B12), E (rich in wheatgerm)

Minerals (particularly in whole grain foods): magnesium, calcium, iron, zinc and selenium

Milk products (includes milk, yoghurt, cheese) and alternatives

Advice

Eat at least 2 servings a day
(choose low- or reduced-fat options)

Serving size examples

1 glass milk (250 ml)

1 small pottle yoghurt

2 slices cheese (40 g)

1 glass calcium-fortified soy milk (250 ml)

Nutrients provided

Protein

Fats: higher proportion of saturated than poly- or mono-unsaturated fats, especially in full-fat products

Vitamins: riboflavin, B12, A, D (levels of A and D are naturally lower in low-fat milk products, but addition of A and D up to levels in standard milk products is permitted)

Minerals: especially calcium, phosphorus, zinc and iodine

Legumes, nuts, seeds, fish and other seafood, eggs, poultry or red meat with fat removed

Advice

Eat at least 2 servings of legumes, nuts, and seeds a day

OR

Eat at least 1 serving of fish and other seafood, eggs, poultry or red meat a day

Serving size examples

¾ cup cooked dried beans, split peas or lentils

30 g nuts or seeds (small handful)

OR

1 medium fillet of cooked fish (100 g)

1 egg (50 g)

2 drumsticks or 1 chicken leg (110 g)

2 slices cooked meat (approximately 100 g)

¾ cup mince or casserole (195 g)

Nutrients provided

Protein

Fats: both visible and marbled in meat (mostly saturated fat, cholesterol); mostly unsaturated fats in seafood, nuts and seeds

Vitamins: B12, niacin, thiamin

Minerals: iron, zinc, magnesium, copper, potassium, phosphorus and selenium

Iodine: particularly in seafood and eggs

The serving size advice is under review, but it is current until new advice is published.

Appendix 4

Table of activities

Light-intensity activities (1.5–2.9 METs)	MET* value	Resistance activities	MET value
Exergaming	2.3	Carrying shopping	2.5
Housework (excluding vacuuming)	2.0–2.9	Golf	5.0–5.6
Light home repairs	2.5	Rock climbing	7.5
Standing	2.0	Sawing	6.0
Yoga	2.8	Tai chi	3.0
		Waka ama, oe vaka, kayaking, canoeing	2.8–12.5
		Water aerobics	5.5
		Weight training	3.5–6.0

Moderate intensity activities (3–5.9 METs)	MET value	Vigorous-intensity activities (over 6 METs)	MET value
Aerobics/step aerobics	5.9	Competitive team sports – basketball, football, rugby, league, hockey, netball, touch	8.0
Brisk walking	4.5	Diving, scuba diving	7.0
Cricket	4.8	Fishing (in waders)	6.0
Cycling < 16 km/h on the flat	5.8	Heavy home repair, hard physical labour, hand sawing, moving heavy loads/heavy furniture, shovelling coal, chopping wood	> 7.0
DIY cleaning gutters, sanding floors, painting the house, carpentry	4.5	High-intensity intermittent training	> 7.0
Dog walking	3.0	Hill walking**	6.3
Exergaming (moderate-intensity)	3.8	Jogging/running**	> 7.0
Fishing (bank or boat)	3.5	Ki o Rahi	~8.0
		Nordic walking**	9.5
		Road cycling > 16 km/h**	10.0

Moderate intensity activities (3–5.9 METs) continued.	MET value	Vigorous-intensity activities (over 6 METs) continued.	MET value
Kilikiti	5.3	Rope skipping	8.8–12.3
Occupations including waiting tables, cleaning, picking fruit/ vegetables	3.5–4.5	Rowing > 9.5 km/h**	12.5
Playing actively with children	3.5–5.8	Scuba diving	7.0
Poi, Poi toa (traditional Māori activity used in combat training and action songs or dances)	5.3	Squash, tennis, table tennis	7.3–12.0
Siva and Soke (Pacific dancing)	3.0–6.0	Static cycle programmes**	> 7.0
Strenuous gardening (carrying loads in a wheelbarrow or digging)	3.3	Tramping	7.8
Stair climbing**	5.0	Uphill mountain biking**	14.0
Surfing	5.0	Occupations such as firefighting, farming, forestry, coal mining, building	8.0–9.0
Vacuuming	3.5	Vigorous skiing or snowboarding	> 7.0
Washing the car	3.5	Weight-based group-fitness programmes**	7.8

Activities that vary in their intensity depending on the effort exerted	MET value
Badminton	5.5–7.0
Boxing**	5.5–12.8
Cycling**	5.0–14.0
Dancing	3.5-11.3
Equipment-based exercise**	3.5–12.0
Hunting	2.5–11.3
Kapa haka	2.5–8.9
Jogging/running**	4.5–23.0
Swimming**	5.3–13.8
Waka ama, oe vaka, canoeing, kayaking**	2.8–12.5
Walking	2.3–12.0

For a full list of physical activities, see the Compendium of Physical Activities (www.sites.google.com/site/compendiumofphysicalactivities/compendia) which also lists their MET rating (Ainsworth et al 2011), and the Metabolic equivalent (MET) intensities of culturally specific physical activities performed by New Zealanders (Moy et al 2006).

Note:

* Metabolic equivalents (METs) are a way of measuring how much energy a person uses. One MET is the energy the body needs to perform vital core functions for one minute at rest such as breathing and pumping blood round the body.

** These are aerobic activities that can have an element of resistance. As such, they help an adult to achieve Activity Statement 4: Do some muscle strengthening activities on at least two days each week.

Appendix 5

Popular activities for adults in New Zealand

The top 20 activities for male and female New Zealand adults (18–64 years), as found in the Sport New Zealand 2013/14 Active New Zealand Survey, are shown in Table 12. Table 13 lists the top 10 activities for different ethnic groups.

Table 12: The 20 most popular sport and recreation activities participated in over 12 months by gender

	Men participating	%	Number (1000s)
1	Walking	46.8	744
2	Fishing	29.2	465
3	Cycling	28.4	451
4	Swimming	27.0	430
5	Equipment-based exercise	23.2	370
6	Jogging/ running	20.3	323
7	Golf	15.0	238
8	Tramping	11.2	178
9	Football	10.5	167
10	Hunting	9.7	154
11	Canoeing/ kayaking	9.5	151
12	Cricket	8.7	139
13	Touch rugby	7.3	116
14	Basketball	7.2	115
15	Snow sports	6.9	110
16	Rugby	6.8	109
17	Tennis	6.6	106
18	Shooting	6.2	99
19	Surfing/ bodyboarding	6.2	98
20	Table tennis	6.0	95

	Women participating	%	Number (1000s)
1	Walking	72.2	1,245
2	Swimming	33.1	570
3	Equipment-based exercise	21.7	374
4	Cycling	21.6	372
5	Jogging/ running	18.1	312
6	Pilates/yoga	16.6	287
7	Dance	14.1	243
8	Aerobics	13.4	231
9	Fishing	10.5	181
10	Tramping	8.3	144
11	Netball	8.1	139
12	Callisthenics	7.1	123
13	Canoeing/ kayaking	6.9	119
14	Tennis	6.0	103
15	Snow sports	5.5	95
16	Aquarobics	4.9	84
17	Golf	4.6	80
18	Exercising at home (other)	4.4	75
19	Exercise classes (other)	3.8	65
20	Badminton	3.6	61

Source: Sport New Zealand (2015)

Table 13: The 10 most popular sport and recreation activities participated in over 12 months by ethnicity

	All adults	
1	Walking	60%
2	Swimming	30.2%
3	Cycling	24.8%
4	Equipment-based exercise	22.4%
5	Fishing	19.5%
6	Jogging/running	19.2%
7	Pilates/yoga	10.5%
8	Dance	9.8%
9	Tramping	9.7%
10	Golf	9.6%

	Māori	
1	Walking	47.1%
2	Swimming	27.8%
3	Fishing	27.5%
4	Equipment-based exercise	21.9%
5	Cycling	19.1%
6	Jogging/running	17.7%
7	Dance	12.6%
8	Touch rugby	11.7%
9	Netball	11.3%
10	Aerobics	10.3%

	NZ European	
1	Walking	63.3%
2	Swimming	31.2%
3	Cycling	28.4%
4	Equipment-based exercise	22.8%
5	Fishing	20.9%
6	Jogging/running	19.2%
7	Golf	11.4%
8	Tramping	10.7%
9	Pilates/yoga	10.6%
10	Canoeing/kayaking	9.6%

	Asian peoples	
1	Walking	52.3%
2	Swimming	29.5%
3	Equipment-based exercise	22.1%
4	Jogging/running	18.1%
5	Badminton	14.9%
6	Cricket	12.4%
7	Pilates/yoga	12.0%
8	Fishing	11.5%
9	Cycling	11.0%
10	Football	10.3%

Source: Sport New Zealand (2015)

Pacific peoples		
1	Walking	51.7%
2	Jogging/running	23.7%
3	Equipment-based exercise	22.7%
4	Swimming	20.4%
5	Touch rugby	17.7%
6	Dance	17.4%
7	Fishing	14.9%
8	Netball	14.0%
9	Volleyball	13.6%
10	Rugby	13.5%

Other ethnicities		
1	Walking	61.2%
2	Swimming	35.2%
3	Cycling	28.5%
4	Equipment-based exercise	23.9%
5	Jogging/running	20.8%
6	Fishing	16.5%
7	Tramping	15.6%
8	Pilates/yoga	14.9%
9	Aerobics	11.6%
10	Dance	11.5%