

# DIET, PHYSICAL ACTIVITY AND HEALTH

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There is overwhelming evidence that diet and physical activity interact to influence health in profound ways throughout life. Increasing the consumption of fruits, vegetables, whole grains and dairy products has important health benefits to people living in Ireland. Regular physical activity also plays an important role in maintaining energy balance to avoid excess weight and obesity, as well as halving the risk of many chronic diseases such as coronary heart disease, stroke, hypertension and diabetes. Moderate to vigorous physical activity helps to build stronger bones in growing children and maintain bone health in adulthood, especially if combined with a calcium-rich diet. However, overconsumption of calories and physical inactivity are two markers of a lifestyle that leads to obesity in modern society, which is linked with inappropriate dietary and exercise behaviour patterns.

Evidence from a large number of scientific studies has identified poor-quality nutrition (encompassing high intake of energy-dense and/or nutrient-poor foods, simple sugar-sweetened drinks and low dietary fibre intake) as a major contributor to the development of obesity, hypertension, cardiovascular disease and diabetes. Obesity has serious immediate health consequences for both the individual and the broader community. The risk that poor diet will contribute to the development of childhood obesity is also particularly alarming, as it leads to metabolic disorders in the young and an increased adult mortality irrespective of adult weight status, making prevention in childhood particularly important. Efforts to control or reduce excess weight or obesity at any stage in life should incorporate dietary control and include enhanced phys-

ical activity, which helps to maintain metabolic fitness and muscle mass.

Efforts to reduce levels of obesity and increase physical activity must be the number one public health priority in Ireland. In addition, it appears that in older people a poor-quality diet (especially a low-protein diet) could represent an additional risk factor for the development of conditions such as a reduction in muscle mass (sarcopaenia) and could favour the establishment of metabolic disorders such as type 2 diabetes. The overall recommendations made here are based on scientific evidence and are short, simple and easy to follow.

**CARBOHYDRATES:** Carbohydrates are a major component of a healthy diet and should make up between 45% and 65% of total calories (energy intake) over a 24 hour period. Complex digestible carbohydrates are found in starch-based foods such as rice, pasta and potatoes. These foods provide simple sugars that are rapidly converted to glucose, which is a primary metabolic fuel for the brain, central nervous system and red blood cells. As well as digestible carbohydrates, a healthy diet should contain sufficient dietary fibre, which consists of non-digestible carbohydrates.

**PROTEIN:** Protein is an essential dietary macronutrient because it provides many of the essential amino acid 'building blocks' required for healthy metabolism. Protein should make up between 10% and 35% of total calories. Most people in Ireland consume protein at this advised level.

**FAT:** Fats and oils are essential to a healthy diet. They supply energy and essential fatty acids (required for optimal cell and tissue function) and serve as a carrier for the absorption of the fat-soluble vitamins A, D, E and K. The recommended total fat intake is 20% to 35% of total calories. Fat intake that exceeds 35% of total calories is associated with increased saturated (unhealthy) fat and also with excessive calorie intake (related to inappropriate weight gain), mainly due to consumption of processed and/or fast food. Fast food is especially high in fat content, and there is an association between fast food intake, increased body mass index (BMI) and weight gain.

**ALCOHOL:** The consumption of alcohol can have beneficial or harmful effects depending on the amount consumed and the age and health of the person consuming the alcohol. Heavy alcohol consumption can lead to liver disease, high blood pressure, cancer of the gastrointestinal tract, injury and even violence and death. Alcohol may have beneficial effects when consumed in moderation (one or two drinks, equivalent to 3 units, a day).

**VITAMINS AND MINERALS:** Based on the advice for children, adolescents and some adult groups (e.g. pregnant women and elderly people), an adequate intake of the following is especially important for good health: calcium, potassium, magnesium, iron, fibre, folic acid, Vitamins A, B12, C, D and E[1].

#### **DIET RECOMMENDATIONS:**

- Consume foods that contain the major nutrient groups (carbohydrates, proteins and fat), but limit the intake of saturated and trans fats, cholesterol, added simple sugars, salt and alcohol. To maintain body weight at a healthy level, balance calorie intake with calorie expenditure through regular physical activity. To prevent weight gain, gradually decrease food and beverage intake and increase physical activity.
- Physical activity may have a low impact on body weight if it is not accompanied by dietary control. However, even if weight loss is minimal, regular physical activity will have clear benefits, lowering the risk of type 2 diabetes, cardiovascular disease, osteoporosis, depression and some cancers. To reduce the risk of chronic diseases, people should engage in at least 30 minutes of moderate-intensity physical activity on most days of the week. To manage body weight and avoid the weight gain associated with

ageing, it is recommended that people engage in at least 60 minutes of moderate- to vigorous- intensity physical activity on most days of the week. This exercise can be accumulated in short bouts of 10 minutes each, and may include easily incorporated activities such as brisk walking, stair-climbing or cycling. For children, at least 1.5 hours a day of moderate to vigorous physical activity is necessary to maintain fitness and health.

- Physical fitness may be maintained by cardiovascular conditioning, stretching exercises to maintain flexibility and resistance exercises for muscle strength and power. Maintaining healthy muscle mass and function through regular resistance training is essential to maintain mobility and independence, especially in advanced age. A reduction in muscle mass with ageing is a contributing factor to a number of chronic metabolic disorders, such as type 2 diabetes. Building and maintaining strong bones reduces the risk of fracture, particularly in old age. Vigorous physical activity, particularly in childhood and early adulthood, is important, as is a calcium-rich diet, which stimulates and maintains bone growth. Weight-bearing activities such as walking, dancing, stair climbing, running, hiking and ball and racquet sports are particularly effective. Swimming and cycling, although very good forms of exercise from the general fitness point of view, do not provide a sufficient stimulus for bone growth.

#### **ADDITIONAL SUGGESTIONS TO IMPROVE PUBLIC HEALTH:**

Improved urban planning (for example, more and longer cycle lanes, more accessible and affordable public transport, greater provision and subsidized use of exercise equipment at the place or work, and more public green space areas) as well as decreased dependence on cars and changes to local and national food production and food pricing strategies are warranted. These require a coordinated approach from health care professionals, scientists and food producers, as well as local and national government officials, but they will result in meaningful and productive gains [2]. The adoption of adequate physical activity levels and good quality nutrition are by far the 'best buy' for public health in Ireland.

#### **REFERENCES**

1. Dietary Guidelines for Americans 2005. US Department of Health and Human Services and US Department of Agriculture. [www.healthier.us.gov/dietaryguidelines](http://www.healthier.us.gov/dietaryguidelines)
2. Foresight. Tackling obesity: future choices—project report. 2007. [www.foresight.gov.uk/OurWork/ActiveProjects/Obesity/KeyInfo/Index.asp](http://www.foresight.gov.uk/OurWork/ActiveProjects/Obesity/KeyInfo/Index.asp).

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