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**Physical Activity and Fitness** is Volume 361 in the ‘Issues in Society’ series of educational resource books. The aim of this series is to offer current, diverse information about important issues in our world, from an Australian perspective.

**KEY ISSUES IN THIS TOPIC**

Physical activity is a key factor in maintaining good health and fitness. Being physically active has a number of significant health benefits, including chronic disease risk reduction, helping in the control of body weight and improving mental wellbeing.

There has been a decline in physical activity over recent decades due to the sedentary nature of many forms of work, changes in transportation and increased 'screen time'. A lack of regular physical activity and related overweight and obesity is associated with an increased risk of mortality and morbidity from certain cancers, diabetes, osteoporosis, and heart and vascular diseases.

Physical inactivity has been ranked second only to tobacco smoking, in terms of the burden of disease and injury from risk factors in Australia. Globally, physical inactivity is the fourth leading risk factor for mortality. The widespread health, social and economic costs of physical inactivity are confronting.

This book reveals the extent of participation in physical activity by Australians, and explores ways of overcoming sedentary behaviour and inactivity through appropriate forms of exercise to suit your age and situation. Are you being active enough?

**SOURCES OF INFORMATION**

Titles in the ‘Issues in Society’ series are individual resource books which provide an overview on a specific subject comprised of facts and opinions.

The information in this resource book is not from any single author, publication or organisation. The unique value of the ‘Issues in Society’ series lies in its diversity of content and perspectives.

The content comes from a wide variety of sources and includes:

- Newspaper reports and opinion pieces
- Website fact sheets
- Magazine and journal articles
- Statistics and surveys
- Government reports
- Literature from special interest groups

**CRITICAL EVALUATION**

As the information reproduced in this book is from a number of different sources, readers should always be aware of the origin of the text and whether or not the source is likely to be expressing a particular bias or agenda.

It is hoped that, as you read about the many aspects of the issues explored in this book, you will critically evaluate the information presented. In some cases, it is important that you decide whether you are being presented with facts or opinions. Does the writer give a biased or an unbiased report? If an opinion is being expressed, do you agree with the writer?

**EXPLORING ISSUES**

The ‘Exploring issues’ section at the back of this book features a range of ready-to-use worksheets relating to the articles and issues raised in this book. The activities and exercises in these worksheets are suitable for use by students at middle secondary school level and beyond.

**FURTHER RESEARCH**

This title offers a useful starting point for those who need convenient access to information about the issues involved. However, it is only a starting point. The ‘Web links’ section at the back of this book contains a list of useful websites which you can access for more reading on the topic.
Roughly three of every 10 individuals aged 15 years or older – about 1.5 billion people – do not reach present physical activity recommendations," they said in a report that described the problem as a "pandemic."

The picture for adolescents is even more worrying, with four out of five 13- to 15-year-olds not moving enough, the report said.

Inactivity was described for the study as failing to do 30 minutes of moderate physical activity five times a week, 20 minutes of vigorous activity three times a week, or a combination of the two.

Roughly three of every 10 individuals aged 15 years or older – about 1.5 billion people – do not reach present physical activity recommendations.

The researchers found that inactivity increases with age, is higher in women than in men, and more prevalent in high-income countries.

A second study, comparing physical activity levels with population statistics on diseases like diabetes, heart problems and cancer, said lack of exercise claimed more than 5.3 million of the 57 million deaths worldwide in 2008.

It said inactivity was a risk factor comparable to smoking or obesity.

Lack of exercise causes an estimated 6 per cent of coronary heart disease cases, 7 per cent of type 2 diabetes (the most common form) cases, and 10 per cent of breast and colon cancers, it said.

Reducing inactivity by 10 per cent could eliminate more than half a million deaths every year, the report said, adding the estimates were conservative.

The human body needs exercise to help the bones, muscles, heart and other organs function optimally, but populations are walking, running and cycling less and less as they spend more time in cars and in front of computers, the investigators said.

The picture for adolescents is even more worrying, with four out of five 13- to 15-year-olds not moving enough.

The Lancet series called for global efforts to promote physical exercise by improving pedestrian and cyclist safety on city roads, for example, more physical education at school or promoting access to free public exercise spaces.
Insufficient physical activity is the fourth leading risk factor for mortality. Approximately 3.2 million deaths and 32.1 million disability-adjusted life years (DALYs) each year are attributable to insufficient physical activity (representing about 2.1% of global DALYs). People who are insufficiently physically active have a 20-30% increased risk of all-cause mortality compared to those who engage in at least 30 minutes of moderate intensity physical activity on most days of the week.

Participation in 150 minutes of moderate physical activity each week (or equivalent) is estimated to reduce the risk of ischaemic heart disease by approximately 30%, the risk of diabetes by 27%, and the risk of breast and colon cancer by 21-25%. Additionally, physical activity lowers the risk of stroke, hypertension and depression. It is a key determinant of energy expenditure and thus fundamental to energy balance and weight control.

Globally, 31% of adults aged 15 years or older were insufficiently active (men 28% and women 34%) in 2008. Prevalence of insufficient physical activity was highest in the WHO Region of the Americas and the Eastern Mediterranean Region. In both of these regions, almost 50% of women were insufficiently active, while the prevalence for men was 40% in the Americas and 36% in Eastern Mediterranean. The South-East Asia Region showed the lowest percentages (15% for men and 19% for women).

In all WHO regions, men were more active than women, with the biggest difference in prevalence between the two sexes in the Eastern Mediterranean Region. This was also the case in nearly every individual country (Figure 10).

The prevalence of insufficient physical activity rose according to the level of country income. High-income countries had more than double the prevalence compared to low-income countries.
Women were less likely than men to have met the guidelines of 30 minutes of moderate exercise on most days of the week (29% compared with 33%). Around three-quarters of people aged 75 years and over did not meet these guidelines. The remainder of the population exercised more, with their levels ranging from 56% to 64%.

Physical activity levels were related to a number of environmental and socio-economic conditions:

- Adults living in lowest income households were more likely to be sedentary or exercise at low levels (79%) than those in highest income households (61%)
- Almost half (45%) of employed adults worked in a less active job environment (for example, office work)
- Women were more likely to spend 4 hours or more per day sitting at work (57%) than men (47%), and
- People who had dependent children were less likely to meet the recommended physical activity guidelines (28%) than those who did not have children (33%).

Being physically inactive can lead to being overweight and obese, which can increase the risk of developing a number of chronic health conditions. Men and women who were sedentary or exercised at low levels were more likely to have heart disease, stroke and vascular disease, hypertension, Type 2 diabetes and arthritis than those who exercised at moderate or high levels.

More details are available in Physical Activity in Australia: A Snapshot, 2007-08 (cat. no. 4835.0.55.001).
Physical activity is an important factor in maintaining good overall health and wellbeing. Being physically active has significant health benefits, including reducing the risk of some chronic conditions, helping to control weight and improving mental wellbeing. Some forms of physical activity may also help manage long-term conditions, such as arthritis and Type 2 diabetes, by reducing the effects of the conditions and improving people’s quality of life.

Worldwide, physical inactivity is the fourth leading risk factor for mortality, contributing to 6% of deaths.

In recent decades, there has been a decline in physical activity due to the increasingly sedentary nature of many forms of work, activities such as watching television or using a computer, and changes in transportation. Sedentary behaviour is believed to be associated with the rise in overweight and obesity, which increases the risk of cardiovascular disease, colon and breast cancers, Type 2 diabetes and osteoporosis (AIHW, 2011g). In 2006-07, the direct health care costs due to physical inactivity in Australia were estimated to be $1.5 billion, including $469 million attributable to falls and $372 million attributable to coronary heart disease (Econtech, 2007).

Worldwide, physical inactivity is the fourth leading risk factor for mortality, contributing to 6% of deaths (WHO, 2010), and is a leading modifiable health risk factor contributing to the burden of disease and injury in Australia (Begg et al. 2007).

In 2007-08, 60% of Australians adults (18 years and over) had done some exercise for fitness, recreation or sport in the week prior to interview, with:
- 44% walking for exercise
- 31% doing moderate exercise (i.e. exercise that caused a moderate increase in heart rate or breathing) and
- 6% doing vigorous exercise (i.e. exercise that caused a large increase in heart rate or breathing).

Women were more likely to walk for exercise than men (46% compared with 41%), and men were more likely to do moderate exercise (34% compared with 29%) or vigorous exercise (16% compared with 10%). Moderate and vigorous exercise were most common among younger age groups, while older people tended to walk for exercise. (Note that people could report more than one type of exercise.)

Prolonged periods of sitting may not only be detrimental to people’s health but may also counteract the benefits of regular moderate to vigorous physical activity.

However, only 38% of Australians aged 18 years and over met the recommended physical activity guidelines of at least 30 minutes of exercise on most days of the week, with each session lasting 10 minutes or more. This was more common for men than women (40% and 36% respectively) and for younger people.

Even when people were exercising, the health benefits accruing from the exercise may have been jeopardised by their work and leisure habits. Prolonged periods of sitting may not only be detrimental to people’s health but may also counteract the benefits of regular moderate to vigorous physical activity (Healy et al. 2008).

More than three out of four Australians aged 18 years and over spent between two and six hours a day sitting at leisure activities such as watching television, reading or playing computer games (78%), and almost half (45%) spent most of their time sitting at work.

Almost 40% of Australians aged 18 years and over did no exercise at all in the week prior to the survey.

Extract from Year Book Australia, 2012
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Australian Bureau of Statistics
www.abs.gov.au
The WHO estimates that worldwide 3.2 million deaths annually are attributable to not being physically active enough. Insufficient physical activity increases the risk of cardiovascular disease, diabetes and certain cancers. Participation in sufficient regular physical activity is estimated to decrease the risk of heart disease by approximately 30%, reduce the risk of diabetes by 27% and the risk of breast and colon cancer by 21-25%. Physical activity also reduces the risk of stroke, hypertension and depression.

In 2008, worldwide, over one-third (31%) of people aged 15 years and over were insufficiently active. The WHO has reported that the regions with the highest rates of insufficient physical activity in 2008 were the Americas and the Eastern Mediterranean Regions. The WHO Global Strategy on diet, physical activity and health, which was adopted in 2004, aims to address the growing prevalence of people doing insufficient physical activity.

In Australia, nearly two-fifths (38%) of Australians aged 15 years and over were insufficiently physically active in 2008. After adjusting for different age structures across various countries, this was higher than the global average of more than one-third (36%) of people who were insufficiently physically active in that year. According to the ABS National Health Survey, the proportion of Australian adults reporting insufficient physical activity, here defined as a sedentary level of activity, increased slightly in recent years. In 2007-08, over one-third (35%) of Australians aged 15 years and over had a sedentary level of exercise in the two weeks prior to interview, a 5% increase since 2004-05 (after accounting for changes in the age structure).
Physical activity levels in Australia

There is strong evidence linking a wide range of important health and social benefits to participation in regular moderate-intensity physical activity. Statistics from the Department of Health and Ageing

ADULTS

The National Physical Activity Guidelines for Australian Adults recommend putting together at least 30 minutes of moderate-intensity physical activity on, preferably all, days.

According to the National Health Survey in 2007-08, 65% of adults had exercised for recreation, sport or fitness during the two weeks prior to interview. The results from this survey relate only to exercise for sport, recreation or fitness, and therefore are not necessarily indicative of total physical activity; for example they could exclude physical activity at work and walking for transport. In addition, the survey results do not provide information on the number of people that meet the National Physical Activity Guidelines.

The 2007-08 National Health Survey found that:

➤ 72% of Australians aged 15 years and over were classified as sedentary or having low exercise levels. Of these, just under half (49%) recorded no or very little exercise in the previous two weeks (sedentary exercise level) and 51% recorded a low level of exercise.

➤ The proportion of people who were sedentary increased with age as outlined below:
  - 23% of 15-17 year olds
  - 29% of 18-24 years olds
  - 30% of 24-34 year olds
  - 35% of 35-44 year olds
  - 36% of 45-54 year olds
  - 37% of 55-64 year olds
  - 40% of 65-74 year olds
  - 57% of persons aged 75 and over.

➤ Less than one quarter (22%) of Australians were classified as exercising at a moderate level and 6% at a high level.

The proportion of people reporting sedentary or low exercise levels has not changed markedly over the last twelve years, based on age-adjusted estimates from the last four National Health Surveys. In 2007-08, 72% of Australians were classified as sedentary or having low exercise levels, compared with 69% in 1995 and 2001, and 70% in 2004-05.

CHILDREN

The Australian Physical Activity Recommendations for 5 to 18 year olds recommend at least 60 minutes of moderate and vigorous physical activity every day; and state that children should not spend more than two hours of non-educational screen time each day.

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Screen time:

➤ Participation in screen-based activities peaked in children aged 13-14 years, where screen time varied from 3.5 hours in girls to over 4 hours in boys.

➤ Screen time primarily consisted of television viewing (approximately 2.5 hours for both boys and girls).

➤ 33 per cent of the children aged 9-16 years met the recommendations for screen time in the National Physical Activity Recommendations (no more than two hours of non-educational screen time each day).

For more information on the physical activity levels of Australian children please see the 2007 Australian National Children’s Nutrition and Physical Activity Survey.

THE AUSTRALIAN HEALTH SURVEY

In 2011-12 a representative sample of 50,000 Australians will be asked to complete the Australian Health Survey – the most comprehensive collection of health data ever undertaken.

Participants will be asked about any diagnosed health problems they have, the medications and medical services that they use, and new questions about lifestyle factors such as diet and physical activity.

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While the overall health of world populations is improving, there are significant factors that continue to impact on our mental and physical health. How much you earn, your social position, your level of education or your capacity to be involved in activities that help connect you to others in your community are important factors in determining your health status (VicHealth 2009).

In acknowledgement of the social and economic factors affecting the health of the population and sub-populations, VicHealth has established a focus on increasing social and economic participation as a key priority area for action during 2009-13. Our objectives in this area are to:

1. Increase participation in physical activity
2. Increase opportunities for social connection
3. Reduce race-based discrimination and promote diversity
4. Prevent violence against women by increasing participation in respectful relationships
5. Build knowledge to increase access to resources.

This research summary presents a synopsis of the latest published research examining participation in physical activity. Specifically, the summary focuses on physical activity rates, impacts, barriers and facilitators to participation. Other summaries in this series are available at www.vichealth.vic.gov.au

**INTRODUCTION**

Over the past 50 years, there has been a huge shift from a lifestyle that was, by definition, physically active to one that is predominantly sedentary (WHO 2004, Edwards & Tsiouras 2006). There is widespread acknowledgement that participation in physical activity is a ‘fundamental means of improving the physical and mental health of individuals’ (WHO 2004, p.3). Physical activity can promote health and prevent the onset of disease including cardiovascular disease, type 2 diabetes and osteoporosis, forms of cancer, obesity and injury (Bauman et al. 2002, Bull et al. 2004a, WHO 2010a&b). Participation in physical activity is also known to reduce depression, stress and anxiety, and improves self-confidence, self-esteem, energy levels, sleep quality and the ability to concentrate (AIHW 2010a).

We know that those least likely to be active are women, people with lower socioeconomic status, older adults, people born overseas, people with a disability and Indigenous Australians (NPHP 2005, Bauman et al. 2002, Cadilhac et al. 2009, Chau 2007, Thorpe & Browne 2009).

The World Health Organization recommends that “daily activity should be accepted as the cornerstone of a healthy lifestyle. Physical activity should be reintegrated into the routine of everyday living” (WHO 2002, p.6).

The individual, social and economic costs of physical inactivity have led to a national focus on this issue. Our challenge is to facilitate opportunities for access to physical activity. We can do this by supporting individuals to develop the skills required to be physically active across the lifespan and address factors in the environment that lead to sedentary lifestyles. The approach to address the determinants of physical inactivity requires a long-term, collective commitment from a variety of sectors.

**KEY DEFINITIONS AND CONCEPTS**

**Active transport** refers to travel between destinations by walking, cycling or other non-motorised modes (NPHP 2001).

**All-cause mortality** refers to death due to any or all causes.

**Built environment** refers to aspects of our surroundings that are created or modified by people rather than occurring naturally. It includes our homes, neighbourhoods, schools and workplaces, parks, recreation areas and transport systems (including public transport, footpaths and roads) (AIHW 2010a, Sallis & Glanz 2006, Zubrick et al. 2010).

**Measurement of current levels of physical activity across population groups** refers to various methods adopted to measure the proportion of people who are sufficiently active for health, with the varying approaches yielding different estimates. Methods range from self-report, direct observation and heart and motion monitoring (Bauman et al. 2006). Data collections vary, with a more detailed knowledge base available around formalised sport and exercise participation, and less of a knowledge base regarding more incidental physical activity as a result of, for example, active transport.

**MVPA (Moderate to vigorous level physical activity):**

**Moderate physical activity** refers to activity at a level that causes your heart to beat faster and some shortness of breath, but that you can still talk comfortably while doing. This might include brisk walking, bike riding with friends, skateboarding and dancing. **Vigorous physical activity** refers to activity at a level that causes your heart to beat a lot faster and shortness of breath that makes talking difficult between deep breaths so that you ‘huff and puff’. This might include football, netball, soccer, running, swimming laps or training for sport (Glasgow et al. 2005, DoHA 2004b, AIHW 2009).
National Guidelines for Physical Activity refer to the following recommendations:

- For healthy development in infants (birth to one year), physical activity – particularly supervised floor-based play in safe environments – should be encouraged from birth (DoHA 2009).
- Toddlers (one to three years) and pre-schoolers (three to five years) should be physically active every day for at least three hours, spread throughout the day (DoHA 2009).
- Infants, toddlers and pre-schoolers should not be sedentary, restrained or kept inactive for more than one hour at a time, with the exception of sleeping (DoHA 2009).
- Children aged five to 12 should participate in at least 60 minutes (and up to several hours) of moderate to vigorous physical activity every day (DoHA 2004a).
- Children and adolescents aged 12 to 18 should participate in at least 60 minutes of moderate to vigorous physical activity every day (DoHA 2004b).
- Adults should participate in 30 minutes of moderate intensity physical activity on most, and preferably all, days (DoHA 1999).
- Older Australians (primarily referring to those aged over 65, and over 55 for Indigenous Australians) should accumulate at least 30 minutes of moderate intensity physical activity on most, and preferably all, days (Brown, Moorhead & Marshall 2005, DoHA 2010).

Physical activity is “any bodily movement produced by the muscles that results in energy expenditure. Exercise is a subset of physical activity ... [While] most measures of physical activity focus on deliberate activity in leisure time, other forms of activity – such as walking and cycling for transport, and activity associated with a person’s job – are important components of overall physical activity” (AIHW 2010, p.92).

Sedentary behaviour is activity characterised by a sitting or reclining posture and low energy expenditure such as watching television or sitting in the workplace (Schofield, Quigley & Brown 2009, Dunstan et al. 2010, Salmon et al. 2005).

Screen time refers to time spent, for example, watching television or using a computer (AIHW 2008a). Screen time recommendations include the following:
- Children younger than two years should not spend any time watching television or using other electronic media (DVDs, computer and other electronic games) (DoHA 2009).
- For children aged two to five years, sitting and watching television and the use of other electronic media should be limited to less than one hour per day (DoHA 2009).
- Children aged five to 18 years should not spend more than two hours a day using electronic media for entertainment (DoHA 2004a&b).

A life-course (life-span) approach to physical activity refers to encouraging regular and adequate physical activity from youth to old age and involves maternal health and pregnancy outcomes, child and adolescent health and various settings for physical activity (WHO 2004).

More information on physical activity, screen time and healthy eating can be found at [www.health.gov.au](http://www.health.gov.au)

### PARTICIPATION IN PHYSICAL ACTIVITY

#### Adults

- More than two thirds of Australian adults were classified as being sedentary (34.6%) or having low levels of exercise (36.9%) in the two weeks prior to interview. Of these, 68% were men and 76.1% women (ABS 2009a).
- In 2007-08, the proportion of Australian adults who exercised sufficiently to obtain benefits to their health was 37% (AIHW 2010a).
- Although across the whole Australian population women report slightly higher regular physical activity participation rates than men, when compared to men, women of all ages are less likely to engage in levels of physical activity sufficient for health benefits. This is particularly so for older women, mothers and women from non-European speaking backgrounds (Australian Government Independent Sports Panel 2009, AIHW 2010a, Pink 2010a, Brown & ALSWH 2003a, Brown & Trost 2003b, Bauman et al. 2002, Women’s Health Australia 2007, ERASS 2009).
- Adults who watch more than four hours of television a day, when compared to those who watch less than two hours a day, may have up to 46% higher risk of death from all causes, and 80% increased risk for cardiovascular-related death (Dunstan et al. 2010).
- More adults participate in non-organised physical activity than organised physical activity (ERASS 2009).

#### Socioeconomic status

- Regardless of how socioeconomic status is measured (for example, based on education, household income, workforce participation, private health insurance or area of residence) studies repeatedly find that men and women from low socioeconomic groups have a higher incidence of sedentary behaviour or insufficient physical activity to benefit health, and within this cohort, women report lower levels of physical activity (Giles-Corti & Donavan 2002, DHS 2008, ABS 2009a, NPHP 2005, Pink 2010b).
- People living in the most disadvantaged areas in Australia are nearly twice as likely to be sedentary (45.4%) as people living in the least disadvantaged areas (24.9%) (AIHW 2010).

#### Culturally and linguistically diverse communities

- People born overseas are more likely to have a sedentary or low exercise level. Those born in Southern and Eastern Europe (81.8%), North Africa and the Middle East (79.5%) and South-East Asia (76.7%) report lower levels of exercise compared to those born in Australia.
46% of children born in non-English speaking countries do not participate in organised sport, compared with 25% of children born in Australia (ABS 2009b).

For people born overseas, physical activity rates are higher in non-organised sport than for organised sport regardless of country of birth, although there are differences within groups. For example, people born in the Middle East or North Africa have the lowest participation rates in organised sport and physical activity (17%) and have high participation rates in non-organised sport and physical activity (88%) (Chau 2007).

Regular participation in non-organised physical activity is less common among those who speak a non-European language at home (32.5%), compared to those who speak English or another European language at home (39.8%). Regular participation by men in organised physical activity is not significantly impacted by language; however, among females, those who speak a non-European language at home have the lowest regular participation rates (37.8%), especially when compared to those who speak a European language at home (55.2%) (ERASS 2009).

Indigenous Australians


Physical inactivity is responsible for 8.4% of the total disease burden for Indigenous Australians (Vos et al. 2007).

In non-remote areas, being sedentary or engaging in low levels of exercise increased with age, ranging from 67% of indigenous people aged 15 to 24 to 85% of those aged 55 and over (ABS 2007).

49% of Indigenous Australian adults living in non-remote areas in 2004-05 stated that they had not done any physical activity in the two weeks prior to reporting (Penn 2008).

Structural barriers can decrease participation in sport. Such barriers include limited access to facilities and high costs of transport, membership and uniforms. Factors such as race-based discrimination can also exclude participation (Thorpe et al. 2009, NPHP 2005).

In 2002, while two thirds of non-Indigenous Australians took part in sport and physical recreation activities, less than half the indigenous population participated (Thorpe et al. 2009).

Overall, rates of sedentary/low levels of exercise are notably higher among Indigenous Australian females than Indigenous Australian males (82% compared with 67%) (Pink et al. 2008).

Children and young people

A significant number of children and young people are insufficiently active to achieve the health benefits of physical activity. Increasing numbers spend less time playing games or sport and more time watching television, using computers and playing video games, very often at the expense of time and opportunities for physical activity and sport (Garrard 2009). There are clear age and gender-related patterns in both the quantity and the type of physical activity children and young people undertake (CSIRO 2008).

Of children aged five to 12 years, 42% did not participate in any organised sport or dancing in the two weeks prior to being surveyed (AIHW 2008a).

A national survey found that approximately 31% of boys and girls aged nine to 16 years failed to meet the national guidelines for physical activity. Adolescent girls achieved lower levels of physical activity than boys and fewer girls aged 14 to 16 years complied with the physical activity guidelines than boys (CSIRO 2008).

Only 46% of males and 30% of females aged 15 to 24 years participated in levels of physical activity as recommended in the national guidelines to obtain a health benefit (AIHW 2007).

It is important to consider children and young people’s physical activity alongside information on the amount of screen time they engage in. Various studies found a positive correlation between hours of television viewing and being overweight (AIHW 2007) with 66% of children exceeding the screen time guidelines (AIHW 2009).

People with a disability

In 2003 there were approximately 3.9 million people (20% of the population) with a disability. Of these, 2.6 million were aged under 65 years (15% of the population aged under 65) and 1.2 million always or sometimes needed help with self-care, mobility or communication. Of people aged under 65, 700,000 always or sometimes needed help with self-care,
mobility or communication (AIHW 2010c).

- In 2002, 102,900 Indigenous Australians (37%) aged 15 years or over had a disability or a long-term health condition. In general terms, the severe disability rates for Indigenous Australians are more than double those of other Australians (2.1 to 2.4 times) (AIHW 2010c).
- Increased severity of disability is associated with lower rates of participation in a range of activities offering health benefits and the potential for community interaction.

- Of people without a disability, 64% take part in sport or physical activities or attend sporting events as a spectator, compared with 50% of people with a disability and 28% of those with a profound or severe core-activity limitation (Trewin 2006).
- For some people with a disability, the barriers in the built environment limit their ability to participate fully in community life. But for others the barriers are social and attitudinal. It is these barriers that proved the most difficult to overcome (National People with Disabilities and Carer Council 2009).
- Whenever possible all people with a disability, including children and youth, should meet physical activity recommendations; however, they should work with their health care provider to understand the types and amounts of physical activity appropriate for them considering their disability (WHO 2010a).

**PHYSICAL ACTIVITY IMPACTS**

**Physical health impacts**

The health benefits of physical activity are well recognised and include increased life expectancy, physical fitness, energy, mental health, cognitive functioning and social connectedness (Bauman et al. 2002, Kahn et al. 2002).

- Regular physical activity reduces cardiovascular risk and helps protect against type 2 diabetes and some forms of cancer, particularly in the primary prevention of colon and breast cancer. It also has benefits for musculoskeletal health in maintaining muscle strength, joint functioning and bone health, which is important for skeletal development in young people and protects against falls and fractures among older people (AIHW 2010, Kahn et al. 2002, WHO 2004, WHO 2010a).
- Physical inactivity is an important contributor to other health risk factors such as obesity, high cholesterol and hypertension (AIHW 2010b).
- Physical inactivity is responsible for more than 6.6% of the total burden of disease and injury in Australia (Begg et al. 2007).
- Globally physical inactivity accounted for 21.5% of heart disease, 11% of stroke, 14% of diabetes, 16% of colon cancer and 10% of breast cancer (Bull et al. 2004b).
- There is typically a risk reduction of 30% (in all-cause mortality) for those achieving the recommended levels of at least moderate intensity physical activity on most days of the week compared to those who are inactive (Lee & Skerrett 2001, Bauman 2004, Woodcock et al. 2010).
- Physical inactivity is now identified as the fourth leading risk factor for global mortality. Physical inactivity levels are rising in many countries with major implications for the prevalence of non-communicable diseases and the general health of the population worldwide (WHO 2010a).

**Psychosocial health impacts**

The impact of physical activity on psychosocial development is considerable.

- There is evidence that physical activity can make a significant contribution to preventing depression, reducing stress and anxiety and improving moods (Bull et al. 2004a&b, Sustrans 2010).
- Sport and organised physical activity in particular were identified as settings where young people develop their identity. They also learn important social skills and values such as working as a team, learning to win and lose, fair play, leadership, decision-making, trust and honesty. A Canadian study demonstrated that sports and physical activity ranked second only to the family in terms of their role in children's values development (The Public Policy Forum and Sport Matters Group 2004).
- Engagement in play and sports gives young people opportunities for self-expression, relief of tension, achievement, social interaction and integration as well as encouraging adoption of other healthy behaviours (for example, avoidance of tobacco, alcohol and other drugs) (WHO 2010c, NPHH 2005).
- International evidence indicates that physical activity improves problem-solving capacity and academic performance (Active Living Research 2009).
- Physical activity is believed to contribute to increased productivity in the workplace and lower worker absenteeism and turnover (Parks & Steelman 2008).

**Community health impacts**

Sport and recreational activities have the capacity to bring people from diverse backgrounds to watch, participate and organise together.

- Participation in physical activity can provide opportunities for social interaction and reduce isolation and exclusion though strengthening relationships, building cohesive communities and enhancing our access to safe and supportive environments (Sport England 2009, Coggsins, Swanston & Crombie 1999).
- Participation in physical activity provides opportunity for social connection, cooperation, reciprocity, collective identity and trust in the community (Chau 2007).
- In rural communities, sport and recreation clubs are the primary source of social interaction and support (Townsend, Moore & Mahoney 2002).
- Inclusive and accessible sport and recreation programs can play an important role in supporting newly arrived and refugee young people settling in Australia (CMY 2007).
Economic impacts

➤ Each year the total economic cost of physical inactivity is estimated to be $13.8 billion and, of this, it was estimated that the cost to the health sector is $719 million (Medibank 2008).

➤ Physical inactivity was estimated to be responsible for 16,178 premature deaths per year in Australia and corresponds to a direct loss of 1.8 working days per average Australian worker per year, or an annual cost of $458 per employee (Medibank 2008).

➤ Less tangible costs arising from reduced life expectancy and reduced quality of life relate to the cost to the ill person and their family in terms of their reduction of quality of life due to such issues as pain, disability, anxiety and suffering (Medibank 2008).

➤ By reducing physical inactivity by as little as 5% in the Australian population there would be significant savings to expenses in the health sector, increases in overall productivity and reduced mortality (Medibank 2008, Stephenson et al. 2000, Cadihilac et al. 2009).

➤ A recent review of interventions aimed at increasing physical activity highlights that some interventions can provide better cost savings to the health sector than others, for example, the pedometer, mass media campaigns, GP referral interventions and internet-based intervention programs (Vos et.al 2010).

FACTORS IMPACTING ON PARTICIPATION IN PHYSICAL ACTIVITY

Individual factors

➤ The most commonly reported barriers to physical activity among physically inactive Australians are a lack of time (40%) and injury or disability (20%) (Booth et al. 1997).

➤ Injury was reported by just under 20% of those aged 18 to 59 years as a barrier to being more active, and was a barrier for nearly 40% of people aged 60 and over (Finch, Owen & Price 2001).

➤ Lack of time is consistently reported as a major constraint on participation in physical activity. People perceive that they have less discretionary time for exercise and sporting activities (Bauman et al. 2002).

➤ Other factors impacting on physical activity participation include lack of social support, lack of time, lack of enjoyment, having children, having health problems and feeling self-conscious (Chau 2007).

Built environment factors

The built environment can either facilitate or discourage physical activity. Consideration should be given to aspects of the built environment that have a significant impact on levels of physical activity, including:

➤ The neighbourhood environment, such as provision of footpaths, street connectivity, mixed land use and urban density.

➤ The road environment and safety measures, such as provision of pedestrian crossings, traffic volume, speed limits and traffic calming.

➤ The amenity of the neighbourhood, such as green spaces and less urban decay, and distance to destinations.

➤ Proximity, as adults are more likely to walk if they have a variety of destinations within 400 metres. The closer sports centres and parks are to young people, the more likely they are to use them (Sunarja, Wood & Giles-Corti 2008, Garrard 2009, Kelty, Giles-Corti & Zubrick 2008).

Social and cultural environment factors

➤ The cost of participating in physical activity is increasingly onerous for many families. The importance of physical activity opportunities that are affordable is evidenced by the strong correlation between sport participation and family income (Australian Government Independent Sports Panel 2009).

➤ Contemporary lifestyles have become increasingly sedentary. Technological advances, labour-saving devices and passive forms of electronic entertainment used during leisure time require less energy expenditure in the domestic and occupational settings and have resulted in minimising physical activity (Bauman et al. 2002, Edwards et al. 2006, AIHW 2008b).

➤ Recent studies found that adult television viewing time and other sedentary behaviours are directly associated with disease, including type 2 diabetes and some cancers (Dunstan et al. 2010).

➤ Increased car ownership and use, along with safety concerns, have lead to less walking, cycling and...
transport-related physical activity (AIHW 2008b).

Contemporary social norms of being a ‘good parent’ have led to parents seeking to protect children from potential risks of strangers or hazards in the built environment. This has resulted in more children being driven to school, picked up from school and kept off the streets. Often the only physical exercise children get is when their parents have time to supervise them (Thomson 2009).

Sporting environments need to be inclusive of the whole community and ensure safe, supportive and culturally inclusive environments for women, Indigenous Australians, people from culturally and linguistically diverse communities and people with disabilities.

The total participation rate in club-based physical activity was 24.9% in 2009. Of this the male regular participation rate (8.6%) exceeded the female rate by almost double (4.4%) (ERASS 2009).

All of these factors need to be addressed in order to increase physical activity rates across the whole population and at the sub-population level.

In a recent study it was identified that social connectedness consistently impacted on the percentage of individuals undertaking sufficient weekly exercise and that over 20% of Australians of working age experienced a low level of social connectedness (expressed in terms of gathering infrequently with friends and relatives, feeling lonely and struggling to find someone to confide in) (Brown & Nepal 2010).

**PROMOTING PHYSICAL ACTIVITY**

“Physical activity promotes wellbeing, physical and mental health, prevents disease, improves social connectedness and quality of life, provides economic benefits and contributes to environmental sustainability. Communities that support health enhancing physical activity, in a variety of accessible and affordable ways, across different settings and throughout life, can achieve many of these benefits” (Global Advocacy Council for Physical Activity 2010).

**CONCLUSION**

This research summary provides an insight into the importance of including physical activity in our everyday lives. Ensuring that the environmental, social and individual determinants of physical inactivity are addressed will help to arrest the increase in sedentary behaviour and reduce the decline in physical activity levels across the lifespan.

**REFERENCES**

- ABS (Australian Bureau of Statistics) 2007, Older Aboriginal and Torres Strait Islander people: A snapshot, 2004-05, Cat. no. 4722.0.55.002, Canberra.
- ABS (Australian Bureau of Statistics) 2009a, National Health Survey 2007-08: summary of results, Cat. no. 4364.0, Canberra.
- ABS (Australian Bureau of Statistics) 2009b, Children’s participation in Cultural and Leisure Activities 2009, Cat. no. 4901.0, Canberra.
- AIHW (Australian Institute of Health and Welfare) 2007, Young Australians: their health and wellbeing 2007, Cat. no. PHE 87, Canberra.
- AIHW (Australian Institute of Health and Welfare) 2008a, Making progress: the health, development and wellbeing of Australia’s children and young people, Cat. no. PHE 104, Canberra.
- AIHW (Australian Institute of Health and Welfare) 2010a, Australia’s health 2010, Australia’s health series no. 12, Cat. no. AUS 122, Canberra.
- Brown W & the ALSWH team 2003a, Health Activity, Healthy Weight, Healthy Women. Summary report prepared for the Australian Commonwealth Department of Health and Ageing (Report no. 80), Women’s Health Australia, Newcastle.
- CMY (Centre for Multicultural Youth, 2007, Refugee Youth Issues Paper: Playing for the Future: The role of sport and recreation in supporting refugee young people to ‘settle well’ in Australia, CMY.
- DHS (Department of Human Services), 2008, Victorian Population Health Survey 2007, Department of Human Services, Melbourne.
- DoHA (Department of Health and Ageing), 2004b, Australia’s Physical Activity Recommendations for 12-18 year olds, Department of Health and Ageing, Canberra.
- DoHA (Department of Health and Ageing), 2004a, Australia’s Physical Activity Recommendations for 5-12 year olds, Department of Health and Ageing, Canberra.
- DoHA (Department of Health and Aged Care), 1999 (reprinted 2005), National Physical Activity Guidelines for Adults, Department of Health and Ageing, Canberra.
- DoHA (Department of Health and Ageing), 2009, Get Up & Grow Health: Eating and Physical Activity for Early Childhood: Director/Coordinator Book, Department
of Health and Ageing, Canberra, p.2.


- NPJPH (National Public Health Partnership), 2005, Be active Australia: a framework for health sector action for physical activity, NPJPH, Melbourne.


- Penn E, 2008, Cardiovascular disease and its associated risk factors in Aboriginal and Torres Strait Islander peoples 2004-05, Cardiovascular disease series no. 29, Cat. no. CVD 41, Australian Institute of Health and Welfare, Canberra.


- Pink B, 2010a, 2009-10 Year Book Australia, ABS Cat. no. 1301.0, Australian Bureau of Statistics, Canberra.


- WHO (World Health Organization), 2000, ‘How times have changed’: active transport literature review, Victorian Health Promotion Foundation (VicHealth), Melbourne.


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- Physical Activity and Fitness
Australians keep jogging and running

The number of Australians jogging or running as a sport or recreation has almost doubled since 2005-06, according to a new report from the Australian Bureau of Statistics.

ABS Director of Culture Recreation and Migrant Statistics, Andrew Middleton said, “the Participation in Sport and Physical Recreation survey showed, running has definitely increased in popularity, we found that nearly 8 per cent of Australians 15 years old or over participated in running or jogging in the last 12 months, up from just over 4 per cent in 2005-06.”

The survey also indicated a decrease in the popularity of swimming and diving.

“Figures for 2011-12 show that 18 per cent of Australians over 15 years old have participated in swimming or diving in the last 12 months, this compares to 9 per cent in 2005-06.”

The two most popular sport or physical recreational activities participated in by Australians were walking (24%) and fitness or gym activities (17%).

Overall 65 per cent of Australians aged 15 and over participated in at least one form of sport or physical recreational activity, walking topped the list as the most popular activity with 24 per cent of Australians walking as a form of exercise.

“Young adults were the most likely to participate in sport and physical recreation,” Mr Middleton said.

“People between the ages of 15 to 17 years had the highest levels of participation at 78 per cent, while people aged 65 and over had the lowest participation rate, 50 per cent.

“Well done to the residents in the Australian Capital Territory, as the highest of all Australian states and territories, with a participation rate of 80 per cent.”

The two most popular sport or physical recreational activities participated in by Australians were walking (24 per cent) and fitness or gym activities (17 per cent).

“The participation rates of men were slightly higher than women, with 66 per cent and 64 per cent respectively.

“About 52 per cent of Australians who participated in sport and physical recreational activities participated 105 times or more during the 12 months prior to interview.

“53 per cent of Australians participated in physical activities that were not formally organised while 27 per cent of participants were involved in organised activities.

“Overall, the most popular facilities used for participating in sport and physical recreational activities were parks and reserves, with 40 per cent of participants using these facilities,” Mr Middleton said.

Further information is available in Participation in Sport and Physical Recreation, Australia 2011-12 (cat. no. 4177.0).
Physical activity and young Australians

Regular physical activity is important in maintaining good health and reduces the risk of overweight or obesity, high blood pressure and Type 2 diabetes, and improves the psychosocial wellbeing of young people.

Four in ten young people (44%) met the physical activity guidelines in 2007-08; however, rates were substantially lower among those living in Outer regional and Remote areas combined (34%) and indigenous young people (14% in 2004-05).

Physical activity has many benefits for the health and wellbeing of young people, and is important in maintaining good health.

Regular physical activity reduces cardiovascular risk and also positively affects cardiovascular risk factors such as overweight or obesity, high blood pressure and Type 2 diabetes.

It protects against some forms of cancer, and strengthens the musculoskeletal system (AIHW 2008d; NHMRC 2003a; Okely et al. 2008). Strengthening the musculoskeletal system in childhood and adolescence helps to reduce the likelihood of osteoporosis (low bone-mineral density), and falls and fractures in later life (AIHW 2006a).

Physical activity may also improve an adolescent’s psychosocial wellbeing by reducing symptoms of depression, stress and anxiety, and through improvements in self-confidence, self-esteem, energy levels, sleep quality and ability to concentrate (Hill et al. 1998).

A young person’s participation in physical activity is shaped by individual preferences, in combination with cultural and family influences, and can be affected by the presence of disease or disability. While parents can influence adolescents’ physical activity, participation in physical activity tends to decrease with age, and males and females may engage in different levels of physical activity, particularly vigorous activity (Armstrong & Welsman 2006; Zakarian et al. 1994). How young people perceive the benefits of, or barriers to, exercise can also affect physical activity levels.

Engaging in regular physical activity during adolescence increases the likelihood of positive health behaviours in adulthood.

Decreases in physical activity over time may be due to increases in technology in the home, passive leisure activities such as watching television or playing computer games, reliance on car transportation and less physically demanding work choices (Kumanyika et al. 2002; Zakarian et al. 1994).

Environmental factors that encourage or discourage people from being physically active include neighbourhood layout, perceptions of neighbourhood safety, access to facilities or public open space, climate and public transport (Gill et al. 2005).

Engaging in regular physical activity during adolescence increases the likelihood of positive health behaviours in adulthood.

Physical activity is a critical factor in determining a person’s body weight. If energy intake (via food and drink) is not balanced by energy expenditure (via activity and internal body functions) on a sustained basis, the excess food energy is stored as body fat. Physical inactivity and poor nutrition are important contributors to the rising levels of obesity in the general population (AIHW 2008d; see also Chapter 12 Overweight and obesity and Chapter 14 Nutrition).

PHYSICAL ACTIVITY AMONG YOUNG AUSTRALIANS

In Australia, National Physical Activity Guidelines have been developed around the intensity, duration and frequency of physical activity that is necessary to obtain health benefits for children and young people. These guidelines recommend at least 60 minutes of moderate to vigorous physical activity (for example, a brisk walk or a game of netball or football) every day of the week for children aged 5-17 years. For those aged 18 years and over, the guidelines recommend...
at least 30 minutes of moderate intensity physical activity on most (preferably all) days of the week. This is consistent with research showing that the health benefits of physical activity are often linked to the intensity at which an activity is performed.

Measuring compliance against these guidelines in the general population is usually done using surveys to ascertain the amount of time spent on various levels of activity and the number of sessions undertaken for each level over one week.

The latest available physical activity data comes from the Australian Bureau of Statistics’ (ABS) 2007-08 National Health Survey, which included questions about exercising for sport, recreation and fitness, as well as transport for those aged 15 years and over (see Appendix 2 Data sources of the report for more information on this survey). These data cannot be used to directly measure compliance with the national guidelines.

However, by using the number of days on which exercise was undertaken over a one-week period as a proxy for the number of sessions, these data are a proxy measure of young people meeting National Physical Activity Guidelines as both the frequency of physical activity and the duration are taken into account.

**National indicator: Proportion of young people aged 15-24 years meeting the National Physical Activity Guidelines.**

In 2007-08, among young people aged 15-24 years:
- Four in ten (44%) met the National Physical Activity Guidelines for moderate to vigorous physical activity (in terms of both time and proxy sessions in a one-week period), equating to an estimated 1.3 million young Australians.
- Overall, similar proportions of males and females met the guidelines (48% and 41% respectively).
- Young adults (18-24 year olds) were more likely than adolescents to meet the National Physical Activity Guidelines (47% and 30% respectively). This may reflect the differences in the definition of sufficient physical activity in the guidelines for these two age groups for adolescents the duration of the activity per day is defined as 60 minutes, twice as long as the 30 minutes defined for young adults.
- While adolescents are less likely to meet the guidelines, many still report significant levels of physical activity, with 23% reporting between 30 and 59 minutes of physical activity per day on most days of the week (Figure 13.1).
- Young adults (18-24 year olds) were more likely to meet the physical activity guidelines than older adults (25-64 year olds) 47% and 40% respectively.
- More than one in four young people (27%) were sedentary (no exercise or very low levels of physical activity), and the proportion of people who were sedentary was higher among 18-24 year olds than 15-17 year olds (29% and 23% respectively).

**FIGURE 13.1: YOUNG PEOPLE AGED 15-24 YEARS WHO PARTICIPATED IN PHYSICAL ACTIVITY WITHIN THE LAST WEEK, 2007-08**

<table>
<thead>
<tr>
<th>Duration of physical activity per session (minutes)</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-29</td>
<td>15-17 years</td>
</tr>
<tr>
<td>30-59</td>
<td>18-24 years</td>
</tr>
<tr>
<td>60-99</td>
<td></td>
</tr>
<tr>
<td>100 and over</td>
<td></td>
</tr>
</tbody>
</table>

Note: Denominator is all young people of the relevant age group.

Source: AIHW analysis of the ABS ‘2007-08 National Health Survey’ confidentialised unit record file.
respectively). Young people aged 15–24 years were less likely to be sedentary than those aged 25–64 years (27% and 34% respectively).

**Screen time use**

The *National Physical Activity Guidelines* recommended that children not exceed more than 2 hours of non-educational screen time (for example, watching movies or playing computer games) per day (CSIRO 2007). Evidence suggests that children who engage in more than 2 hours of non-educational screen time per day are more likely to be overweight; be less physically active; consume more sugary drinks; snack on foods high in sugar, salt and fat; and have fewer social interactions (CSIRO 2007).

The *National Physical Activity Guidelines* recommended that children not exceed more than two hours of non-educational screen time per day.

According to the *National Secondary Students’ Diet and Activity Survey* (NaSSDA) in 2009-10, on week days 71% of students in years 8 to 11 exceeded the recommended screen time, while on weekends 83% exceeded the guidelines. Males were more likely to exceed the recommended screen time than females, on both weekdays (74% and 64% respectively) and weekends (85% and 81% respectively) (Cancer Council Australia 2010b).

**DOES PHYSICAL ACTIVITY VARY ACROSS POPULATION GROUPS?**

Physical activity may be influenced by economic, cultural and environmental factors, which may limit the accessibility of physical activity among certain population groups, such as Aboriginal and Torres Strait Islander young people, young people living in remote areas and those who experience socioeconomic disadvantage.

Reduced levels of physical activity may be more prevalent in communities with a lack of supporting infrastructure such as sportgrounds, playgrounds, skateparks, bike paths and public open spaces. Socioeconomic status may be a factor in the type of activity that young people participate in, particularly if infrastructure is inaccessible to people without private transport or participation fees are too expensive (Booth et al. 2002; Transportation & Research Board 2005). Lower levels of physical activity may also occur in neighbourhoods with lower levels of perceived safety (Oliver & Hayes 2005).

Perceptions of safety or levels of infrastructure may be lower in areas of socioeconomic disadvantage or in some remote communities. Cultural background and gender may also affect physical activity levels (Booth et al. 2002).

Among young people aged 15-24 years meeting the *National Physical Activity Guidelines* for moderate to vigorous physical activity:

- Indigenous young people were substantially less likely than non-indigenous young people to meet the guidelines (14% and 34% respectively), according to the ABS 2004-05 *National Aboriginal and Torres Strait Islander Health Survey* and the 2004-05 *National Health Survey*.
- Physical activity rates decreased with remoteness – from 46% among those living in Major cities to 34% in *Outer regional* and *Remote* areas combined, according to the ABS 2007-08 *National Health Survey* (note that people living in Very remote areas are excluded from this survey) (Figure 13.2).
- There was no statistically significant difference in physical activity rates for young people living in the lowest and highest socioeconomic status areas (38% and 50% respectively) (Figure 13.2).
Children’s participation in organised sport and/or dancing

A REPORT EXTRACT FROM THE AUSTRALIAN BUREAU OF STATISTICS

Age and sex

The rate of children’s participation in sport and/or dancing was 66% in 2012. The highest participation rate was for those aged 9-11 years (73%). Participation in sport and/or dancing was similar for boys (67%) and girls (65%) in 2012. However, for those aged 12-14 years participation was significantly higher for boys (67%) compared with girls (61%).

Looking at the top ten organised sports since 2003, the number of children participating has increased by approximately one quarter for dancing and martial arts.

Participation in selected organised sports over time

Looking at the top ten organised sports (including dancing) since 2003, the number of children participating has increased by approximately one quarter for dancing (27%) and martial arts (24%). Though participation in outdoor soccer increased by 17%, there was not enough evidence to suggest that this increase was statistically significant. Participation in tennis and netball has declined over the time period, down by 10% and 8% respectively.

Duration of participation

In 2012, over one quarter (26%) of children participated in organised sport and/or dancing for 2 hours or less in the two weeks prior to interview. This was significantly higher than for children who participated for 3-4 hours or 5-9 hours (15% for both) and those who participated for 10 hours or more (10%).

A higher proportion of children aged 12-14 years (16%) participated for 10 hours or more in the two weeks.

---

**CHILDREN PARTICIPATING IN SPORT AND/OR DANCING, BY SEX AND AGE GROUP – 2012**

<table>
<thead>
<tr>
<th>Participation rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
</tr>
<tr>
<td>5-8 years</td>
</tr>
</tbody>
</table>

**CHILDREN’S PARTICIPATION IN TOP 10 ORGANISED SPORTS (INCLUDING DANCING), PERSONS – 2003 AND 2012**

<table>
<thead>
<tr>
<th>Sport</th>
<th>2003 ('000)</th>
<th>2006 ('000)</th>
<th>2009 ('000)</th>
<th>2012 ('000)</th>
<th>Participation rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NUMBER ('000)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming/Diving</td>
<td>439.1</td>
<td>462.5</td>
<td>502.9</td>
<td>492.1</td>
<td>16.6 17.4 18.5 17.7</td>
</tr>
<tr>
<td>Dancing</td>
<td>329.3</td>
<td>332.6</td>
<td>390.4</td>
<td>418.1</td>
<td>12.4 12.5 14.3 15.0</td>
</tr>
<tr>
<td>Soccer (outdoor)</td>
<td>355.9</td>
<td>351.1</td>
<td>360.4</td>
<td>397.6</td>
<td>13.4 13.2 13.2 14.3</td>
</tr>
<tr>
<td>Australian Rules football</td>
<td>193.6</td>
<td>200.4</td>
<td>235.1</td>
<td>226.5</td>
<td>7.3 7.5 8.6 8.1</td>
</tr>
<tr>
<td>Netball</td>
<td>241.2</td>
<td>225.8</td>
<td>228.5</td>
<td>222.7</td>
<td>9.1 8.5 8.4 8.0</td>
</tr>
<tr>
<td>Basketball</td>
<td>205.0</td>
<td>176.3</td>
<td>201.9</td>
<td>220.2</td>
<td>7.7 6.6 7.4 7.9</td>
</tr>
<tr>
<td>Tennis</td>
<td>228.5</td>
<td>195.1</td>
<td>214.8</td>
<td>205.2</td>
<td>8.6 7.3 7.9 7.4</td>
</tr>
<tr>
<td>Martial arts</td>
<td>129.7</td>
<td>120.4</td>
<td>154.6</td>
<td>161.0</td>
<td>4.9 4.5 5.7 5.8</td>
</tr>
<tr>
<td>Gymnastics(a)</td>
<td>. . . . . .</td>
<td>. . . . . .</td>
<td>. . . . . .</td>
<td>. . . . . .</td>
<td>. . . . . . . . . . . .</td>
</tr>
<tr>
<td>Cricket (outdoor)</td>
<td>133.6</td>
<td>143.5</td>
<td>142.5</td>
<td>130.7</td>
<td>5.0 5.4 5.2 4.7</td>
</tr>
</tbody>
</table>

---

(a) In 2009, callisthenics was included in the Gymnastics category. In 2012, callisthenics was excluded from organised sport altogether, and cheerleading was included in the Gymnastics category. Therefore the data are not comparable.

Source: Children’s Participation in Cultural and Leisure Activities, Australia, (cat. no. 4901.0)

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prior to interview, compared with those aged 9-11 years (11%) and 5-8 years (5%).

**Average time spent**

In 2012, the average time that children aged 5-14 years spent participating in sport and/or dancing in the two weeks prior to interview was 5 hours and 24 minutes.

The average time spent participating in organised sport and/or dancing was slightly higher for girls (5 hours and 42 minutes) than for boys (5 hours and 6 minutes) in 2012.

Looking at participation by boys and girls in each age group, the only significant difference was in the 5-8 year age group with girls spending more time on average (4 hours and 18 minutes) compared with boys (3 hours and 42 minutes).

Chapter 2: Participation in organised sport and/or dancing, *Children’s Participation in Sport and Leisure Time Activities*, 4901.0.55.001

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**DANCING AND MARTIAL ARTS EXPERIENCE KICK IN POPULARITY**

More Australian children are dancing and engaging in martial arts – but less are playing netball and tennis – according to figures released by the Australian Bureau of Statistics

A BS Director of the National Centre for Culture and Recreation Statistics, Andrew Middleton said the *Children’s Participation in Cultural and Leisure Activities* survey has been conducted every three years, and has shown some interesting trends on participation in sport, cultural activities and use of technology for children aged between 5 and 14 years.

"Between 2003 and 2012, children’s participation has increased by 27 per cent for dancing and 24 per cent for martial arts," said Mr Middleton.

"Contributing to the increasing popularity of dancing was a rise in participation among children aged 5 to 8 years, with participation increasing from 27 per cent to 32 per cent for girls and from 1 per cent to 4 per cent for boys.

"Since 2003, swimming and diving has remained the most popular sport for younger Australians. The survey showed that 25 per cent of 5-8 year olds and 18 per cent of 9-11 year olds participated in swimming and diving in 2012.

"For children aged 12-14 years, outdoor soccer, netball and dancing were the most popular sports in 2012, with participation rates of 13 per cent for outdoor soccer and 11 per cent for both netball and dancing.

"Overall, the number of children who participated in netball declined between by 8 per cent since 2003. Participation in tennis also fell by 10 per cent in this period.

"Children are also spending less time watching TV than they did a decade ago, with an average of 15 hours per week spent in front of the box in 2012 compared to 22 hours per week in 2003.

"The proportion of children accessing the internet increased from 64 per cent in 2003 to 90 per cent in 2012," Mr Middleton said.


Australian Bureau of Statistics | www.abs.gov.au
Physical inactivity is now identified as the fourth leading risk factor for global mortality. Physical inactivity levels are rising in many countries with major implications for the prevalence of non-communicable diseases (NCDs) and the general health of the population worldwide.

The significance of physical activity on public health, the global mandates for the work carried out by WHO in relation to promotion of physical activity and NCDs prevention, and the limited existence of national guidelines on physical activity for health in low- and middle-income countries (LMIC) make evident the need for the development of global recommendations that address the links between the frequency, duration, intensity, type and total amount of physical activity needed for the prevention of NCDs.

The focus of the Global Recommendations on Physical Activity for Health is primary prevention of NCDs through physical activity at population level, and the primary target audience for these Recommendations are policy-makers at national level. Issues not addressed in this document are clinical control and the management of disease through physical activity. Guidance on how to develop interventions and approaches to promote physical activity in population groups are similarly not addressed.

The following steps summarise the process undertaken by the WHO Secretariat in preparation of the Global Recommendations on Physical Activity for Health:

1. Review and compilation of the scientific evidence available for three age groups, for the following outcomes: cancer, cardiorespiratory, metabolic, musculoskeletal and functional health.
2. Settingoutofprocess tod evelopthe Recommendations.
3. Establishment of a global guideline group with expertise both in subject matter and in policy development and implementation.
4. Meeting and electronic consultation of the guideline group to prepare the final draft of the Global Recommendations on Physical Activity for Health.
5. Peer review of the Recommendations and consultation with the WHO Regional Offices.
6. Finalisation of the Recommendations, approval by the WHO Guideline Review Committee.
7. Translation, publication and dissemination.

The recommendations set out in this document address three age groups: 5-17 years old; 18-64 years old; and 65 years old and above. A section focusing on each age group includes the following:

- A narrative summary of scientific evidence
- The current physical activity recommendations
- The interpretation and justification for the recommendations made.

RECOMMENDED LEVELS OF PHYSICAL ACTIVITY FOR HEALTH

5-17 years old

For children and young people of this age group, physical activity includes play, games, sports, transportation, recreation, physical education or planned exercise, in the context of family, school, and community activities.

In order to improve cardiorespiratory and muscular fitness, bone health, cardiovascular and metabolic health biomarkers and reduced symptoms of anxiety and depression, the following are recommended:

1. Children and young people aged 5-17 years old should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily.
2. Physical activity of amounts greater than 60 minutes daily will provide additional health benefits.
3. Most of daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week.

18-64 years old

For adults of this age group, physical activity includes recreational or leisure-time physical activity, transportation (e.g. walking or cycling), occupational (i.e. work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities.
In order to improve cardiorespiratory and muscular fitness, bone health and reduce the risk of NCDs and depression, the following are recommended:

1. **Adults aged 18–64 years** should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.

2. Aerobic activity should be performed in bouts of at least 10 minutes duration.

3. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity.

4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

5. **Adults of this age group with poor mobility** should perform physical activity to enhance balance and prevent falls on 3 or more days per week.

Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

Physical inactivity is now identified as the fourth leading risk factor for global mortality.

**65 years old and above**

For adults of this age group, physical activity includes recreational or leisure-time physical activity, transportation (e.g. walking or cycling), occupational (if the person is still engaged in work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities. In order to improve cardiorespiratory and muscular fitness, bone and functional health, and reduce the risk of NCDs, depression and cognitive decline, the following are recommended:

1. **Adults aged 65 years and above** should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.

2. Aerobic activity should be performed in bouts of at least 10 minutes duration.

3. For additional health benefits, adults aged 65 years and above should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity.

4. Adults of this age group with poor mobility should perform physical activity to enhance balance and prevent falls on 3 or more days per week.

5. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

6. When adults of this age group cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.

Overall, across all the age groups, the benefits of implementing the above recommendations, and of being physically active, outweigh the harms. At the recommended level of 150 minutes per week of moderate-intensity activity, musculoskeletal injury rates appear to be uncommon. In a population-based approach, in order to decrease the risks of musculoskeletal injuries, it would be appropriate to encourage a moderate start with gradual progress to higher levels of physical activity.

Executive Summary, Global Recommendations on Physical Activity for Health. © 2010 World Health Organization | www.who.int
Great reasons to be active

Being active is good for you in so many ways. It can provide a huge range of fun experiences, make you feel good, improve your health, and is a great way to relax and enjoy the company of your friends.

Regular physical activity can:

➤ Help prevent heart disease, stroke and high blood pressure
➤ Reduce the risk of developing type 2 diabetes and some cancers
➤ Help build and maintain healthy bones, muscles and joints reducing the risk of injury, and
➤ Promote psychological wellbeing.

Physical activity recommendations for children 0-5 years

Being physically active every day is important for the healthy growth and development of infants, toddlers and pre-schoolers.

➤ For infants (birth to one year) physical activity – particularly supervised floor-based play in safe environments – should be encouraged from birth.

Before infants begin to crawl, encourage them to be physically active by reaching and grasping, pulling and pushing, moving their head, body and limbs during daily routines, and during supervised floor play, including tummy time. Once infants are mobile, encourage them to be as active as possible in a safe, supervised and nurturing play environment.

➤ Toddlers (1 to 3 years) and Pre-schoolers (3 to 5 years) should be physically active every day for at least three hours, spread throughout the day.

Young children don’t need to do their three hours of physical activity all at once. It can be accumulated throughout the day and can include light activity like standing up, moving around and playing as well as more vigorous activity like running and jumping. Active play is the best way for young children to be physically active.

➤ Children younger than 2 years of age should not spend any time watching television or using other electronic media (DVDs, computer and other electronic games) and for children 2 to 5 years of age these activities should be limited to less than one hour per day.

Television, DVDs and playing computer games usually involve sitting for long periods – time which could be spent playing active games or interacting with others.

➤ Infants, toddlers and pre-schoolers should not be sedentary, restrained, or kept inactive, for more than one hour at a time, with the exception of sleeping.

All children need some ‘down time’ but they are not naturally inactive for long periods of time. Sitting in strollers, highchairs and car seats (restrained) for long periods isn’t good for children’s health and development. Try to take regular breaks on long car trips and walk or pedal for short trips when you can.

While meeting these recommendations may seem like a challenge at times, a brochure that includes tips and ideas to help you include more activity in your child’s day and further information on the recommendations can be found on www.health.gov.au at National Physical Activity Recommendations for Children 0-5 years.

Physical activity recommendations for 5-12 year olds

A combination of moderate and vigorous activities for at least 60 minutes a day is recommended.

Examples of moderate activities are a brisk walk, a bike ride or any sort of active play.

More vigorous activities will make kids ‘huff and puff’ and include organised sports such as football and netball, as well as activities such as ballet, running and swimming laps. Children typically accumulate activity in intermittent bursts ranging from a few seconds to several minutes, so any sort of active play will usually include some vigorous activity.

Most importantly, kids need the opportunity to participate in a variety of activities that are fun and suit their interests, skills and abilities. Variety will also offer your child a range of health benefits, experiences and challenges.

Children shouldn’t spend more than two hours a day using electronic media for entertainment (e.g. computer games, TV, internet), particularly during daylight hours.

Further information is available on www.health.gov.au at Australia’s Physical Activity Recommendations for 12-18 year olds.

Physical activity recommendations for 12-18 year olds

At least 60 minutes of physical activity every day is recommended. This can built up throughout the day with a variety of activities.

Physical activity should be done at moderate to vigorous intensity. There are heaps of fun ways to do it:

➤ Moderate activities like brisk walking, bike riding with friends, skateboarding and dancing
➤ Vigorous activities such as football, netball, soccer, running, swimming laps or training for sport
➤ Vigorous activities are those that make you ‘huff and puff’. For additional health benefits, try to include 20 minutes or more of vigorous activity at least three to four days a week.
Try to be active in as many ways as possible. Variety is important in providing a range of fun experiences and challenges and provides an opportunity to learn new skills.

Make the most of each activity in your day. For example, you can walk the dog and replace short car trips with a walk or bike ride.

Further information is available on www.health.gov.au at Australia’s Physical Activity Recommendations for 12-18 year olds.

Physical activity guidelines for adults

There are four steps for better health for Australian adults.

Together, steps 1-3 recommend the minimum amount of physical activity you need to do to enhance your health. They are not intended for high-level fitness, sports training or weight loss. To achieve best results, try to carry out all three steps and combine an active lifestyle with healthy eating.

Step 4 is for those who are able, and wish, to achieve greater health and fitness benefits.

Step 1 – Think of movement as an opportunity, not an inconvenience.

Where any form of movement of the body is seen as an opportunity for improving health, not as a time-wasting inconvenience.

Step 2 – Be active every day in as many ways as you can.

Make a habit of walking or cycling instead of using the car, or do things yourself instead of using labour-saving machines.

Step 3 – Put together at least 30 minutes of moderate-intensity physical activity on most, preferably all, day.

You can accumulate your 30 minutes (or more) throughout the day by combining a few shorter sessions of activity of around 10 to 15 minutes each.

Step 4 – If you can, also enjoy some regular, vigorous activity for extra health and fitness.

This step does not replace steps 1-3. Rather it adds an extra level for those who are able, and wish, to achieve greater health and fitness benefits.

Further information is available on www.health.gov.au at National Physical Activity Guidelines for Adults.

Physical activity recommendations for older Australians

It’s never too late to start becoming physically active, and to feel the associated benefits. ‘Too old’ or ‘too frail’ are not of themselves reasons for an older person not to undertake physical activity. Most physical activities can be adjusted to accommodate older people with a range of abilities and health problems, including those living in residential care facilities.

Many improved health and well-being outcomes have been shown to occur with regular physical activity. These include helping to:

➤➤ Maintain or improve physical function and independent living
➤➤ Improve social interactions, quality of life, and reduce depression
➤➤ Build and maintain healthy bones, muscles and joints, reducing the risk of injuries from falls, and
➤➤ Reduce the risk of heart disease, stroke, high blood pressure, type 2 diabetes, and some cancers.

There are five physical activity recommendations for older Australians.

1. Older people should do some form of physical activity, no matter what their age, weight, health problems or abilities.
2. Older people should be active every day in as many ways as possible, doing a range of physical activities that incorporate fitness, strength, balance and flexibility.
3. Older people should accumulate at least 30 minutes of moderate intensity physical activity on most, preferably all, days.
4. Older people who have stopped physical activity, or who are starting a new physical activity, should start at a level that is easily manageable and gradually build up the recommended amount, type and frequency of activity.
5. Older people who continue to enjoy a lifetime of vigorous physical activity should carry on doing so in a manner suited to their capability into later life, provided recommended safety procedures and guidelines are adhered to.

Further information is available on www.health.gov.au at National Physical Activity Guidelines for Older Australians.
MYTHS ABOUT PHYSICAL ACTIVITY
A FACT SHEET FROM THE WORLD HEALTH ORGANIZATION

Being physically active is too expensive. It takes equipment, special shoes and clothes ... and sometimes you even have to pay to use sports facilities.

Physical activity can be done almost anywhere and does not necessarily require equipment! Carrying groceries, wood, books or children are good complementary physical activities, as is climbing the stairs instead of using the elevator.

Walking is perhaps the most practised and most highly recommended physical activity and it is absolutely free. Some urban areas have parks, waterfronts or other pedestrian areas that are ideal for walking, running or playing. It is not imperative to go to a gym, pool or other special sports facility to be physically active.

I’m very busy. Physical activity takes too much time!

It only takes 30 minutes of moderate-intensity physical activity five days per week to improve and maintain your health.

However, this does not mean that physical activity must always be performed for 30 minutes at a time. The activity can be accumulated over the course of the day: a 10 minute brisk walk, three times a day; or 20 minutes in the morning and 10 minutes later that day. These activities can be incorporated into your daily routine – at work, school, home or play. Simple things like taking the stairs, riding a bike to work or getting off the bus two stops before your final destination and then walking the rest of the way can accumulate over the day and can form part of your regular daily activities.

Even if you are very busy – you can still fit 30 minutes of physical activity into your daily routine to improve your health.

Children by nature have so much energy. They hardly sit still. There’s no need to spend time or energy teaching them about physical activity. They are already so active.

Each day children and youth aged 5 to 17, should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity to ensure healthy development. However, physical activity levels are decreasing among young people in countries around the world, especially in poor urban areas.

This decline is largely due to increasingly common sedentary ways of life. For example fewer children walk or cycle to school and excessive time is devoted to watching television, playing computer games, and using computers – often at the expense of time and opportunities for physical activity and sports. Physical education and other school-based physical activities have also been decreasing.

Importantly, patterns of physical activity and healthy lifestyles acquired during childhood and adolescence are more likely to be maintained throughout the life-span. Consequently, improving physical activity levels in young people is imperative for the future health of all populations.

Recommended levels of physical activity for children aged 5-17 years are available at www.who.int
Physical activity is for people in the ‘prime of life’. At my age, I don’t need to be concerned with it ...

Regular physical activity has been shown to improve the functional status and quality of life of older adults. It is recommended that adults aged 65 and above do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity.

Many non-communicable diseases (NCDs) prevalent in older adults can benefit from participation in regular physical activity (cardiovascular disease, osteoarthritis, osteoporosis, hypertension, falls prevention). Physical activity has also been shown to improve mental health and cognitive function in older adults and has been found to contribute to the management of disorders such as depression and anxiety. Active lifestyles often provide older persons with regular occasions to make new friendships, maintain social networks, and interact with other people of all ages.

While being active from an early age can help prevent many diseases, regular movement and activity can also help relieve the disability and pain associated with these conditions. Importantly, the benefits of physical activity can be enjoyed even if regular practice starts late in life.

Recommended levels of physical activity for adults aged 65 and above are available at www.who.int

Physical activity is needed only in industrialised countries. Developing countries have other problems.

Levels of inactivity are high in virtually all developed and developing countries. In developed countries more than half of adults are insufficiently active. In rapidly growing large cities of the developing world, physical inactivity is an even greater problem. Urbanisation has resulted in several environmental factors which discourage participation in physical activity particularly in the transport and occupational domains. In rural areas of developing countries, sedentary pastimes (e.g. watching television) are also becoming increasingly popular.

Global Strategy on Diet, Physical Activity and Health, © 2012 World Health Organization

www.who.int
STANDING UP FOR THE SAKE OF EMPLOYEES’ HEALTH. LITERALLY.

With growing interest in sedentary workplaces as a focus for health promotion, Cancer Council Victoria has recently embarked on a project to reduce the amount of time that staff spend sitting. It seems there may be some unexpected benefits to standing up at work, reports the organisation’s CEO, Todd Harper. Apart from the likely health boost, he suspects that his standing meetings don’t last as long as his seated ones.

CHANGING SEDENTARY PATTERNS AT WORK

If you’re sitting reading this, maybe it’s time to stand up. Spending too much time sitting in the workplace is emerging as a serious public health issue because of its likely contribution to premature mortality and obesity-related conditions. We also know that physical inactivity and obesity are risk factors for diabetes, heart disease and some cancers. More importantly this is likely to be irrespective of how much exercise one does outside of work.

A comprehensive evidence review, commissioned by VicHealth and undertaken by Associate Professor David Dunstan for Baker-IDI and the University of Queensland, suggests the problem is significant and may be increasing.

Consider that office-based workers are the largest occupational group in Australia accounting for more than 12 per cent of the workforce. This group spends an estimated 75 per cent of their day in a chair, not using the muscles that we use to run, walk or even stand and the very muscles that consume energy when they are activated. And labour-saving technologies allow us to do more sitting – email means no more walking to the fax machine, getting up to walk to a colleague’s workstation is soooo yesterday in a brave new Twitterverse.

Even in a fast-paced world that allows 24-hour access to work and social networks, we still find time to consume 21.5 hours of television (seated) a week. And the problems don’t stop at work. Even in a fast-paced world that allows 24-hour access to work and social networks, we still find time to consume 21.5 hours of television (seated) a week. And unless you walk or ride, or catch standing room-only transport, here is another opportunity to rack up the sedentary time.

But while this might sound dire, the fact most Australians (of working age) spend around a third of their waking life at work means there’s real opportunity to use the workplace as a setting for improving health.

There are strong economic arguments for health interventions in the workplace too; in 2008, $3.6 billion was estimated to be lost on workplace productivity due to overweight and obesity, while musculoskeletal disorders accounted for 44 per cent of workplace compensation cases and up to 22 per cent of sick leave.

On the positive side, health interventions such as programs to reduce prolonged workplace sitting may in fact reap economic benefits through preventing chronic
meeting rooms to accommodate standing meetings. Some of the interventions are being evaluated to determine their effectiveness.

We know the dangers of sedentary environments but where our knowledge is less developed is around understanding the effective and practical steps we can take to do something about the problem. This is where the ‘lived experience’ of incubating organisations like VicHealth and the Cancer Council Victoria will contribute to our understanding of the motivators, enablers and barriers to changing traditional workplace sedentary practices.

Personally, I have spent much of the last four years alternating my day between sitting and standing at an adapted desk. Like any new form of exercise, this meant using muscles that I hadn’t been using before, so I had a few minor sore spots in my legs, symptoms that disappeared within a day or two. I know I feel more alert when I have been standing and I suspect that my standing meetings are much shorter than my seated ones!

Modifying workplaces alone will not solve the problem of chronic disease, but they are a key setting for interventions. We need to find ways to make workplaces see this as an obligation to their employees – putting the ‘H’ into OH&S, but also to realise the short and longer term productivity benefits.

We hope that our trial and ones like it will help to identify the most effective ways that workplaces can help to reduce inactivity and, in doing so, take a stand for the health of their employees.

Todd Harper is CEO of Cancer Council Victoria.

_____________________________

Physical activity for people at work

If you are an office worker sitting at a desk all day, why not try some of these simple tips from Nutrition Australia to increase your movement at work:

➤➤ Never eat at your desk, always move to another area during your lunch break. Try going for a 10-minute walk to a park or mall to eat.
➤➤ Keep printers and faxes out of reach so that you need to get up to collect your documents.
➤➤ Keep your phone out of reach so that your body has the chance to move about when you get up to answer it.
➤➤ Rather than communicating via phone or email, get up and speak to someone face to face.
➤➤ Occasionally pull your chair out from your desk and stretch your back muscles – simply flop over your knees and touch your toes to maximise the stretch.
➤➤ If your desk chair has arms, use your arms to lift your body off the chair and hold. This movement exercises both your stomach and arm muscles.
➤➤ Be aware of good posture: sit up straight with your shoulders back and stomach muscles pulled in.
➤➤ Rotate your shoulders and neck periodically to release tension.
➤➤ Every time you come back to your chair, try and hold your stomach muscles in for as long as possible.
➤➤ Encourage yourself to use the stairs whenever possible.
➤➤ If possible, park your car further from the office so that you have to walk an extra 10 minutes each way.

Think of this as an opportunity to increase your level of incidental activity, instead of an inconvenience.

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Illness and improving productivity.

In fact the National Preventative Health Taskforce report in 2009 cited Australian research that found improved weight and metabolic effects in individuals who avoided prolonged sedentary time, interspersed periods of inactivity with breaks, and substituted light-intensity activity for sedentary time.

The fact most Australians (of working age) spend around a third of their waking life at work means there’s real opportunity to use the workplace as a setting for improving health.

There are a number of interventions to reduce sitting times that have been tested in workplaces – such as increasing the number of breaks in the day, introducing sit-to-stand desks, and making modifications to the built environment to encourage greater movement in the day.

While we are still in the early stage of building the evidence here, trials suggest no drop in productivity as a result of the interventions and in fact, workers commonly reported feeling more alert and less sluggish as result of many of these initiatives.

As an organisation engaged in health promotion, Cancer Council Victoria must walk the talk, so we recently embarked on a project to cut sitting times. The project involves engaging the entire organisation by raising awareness of the issue through the provision of information and promoting changes to the way we do work – encouraging standing (or even walking) meetings, and physical changes to the work environment such as piloting desks that allow staff to sit and stand, and adapting
If you're sitting down while you read this, you might want to stand up. Research now shows that sitting for long periods can increase your risk of a range of health conditions and premature death.

This is not only terrible news for those of us with a desk job; it's a grim warning for all. Our increasingly sedentary lifestyle means we all spend a lot of time on our backside – we sit when we drive our cars, eat our meals, watch TV, use a computer (or any other of the screens we regularly use), read from a book, use the phone, catch up for a cuppa with our friends and the list goes on.

But here's the kicker: even if you are meeting – or even exceeding – the Australian Government’s physical activity recommendations, you still need to move more. (These guidelines recommend you get 30 minutes of moderate-intensity exercise per day most days of the week.)

Dr Alicia Thorp from the Baker IDI Heart and Diabetes Institute is currently researching the effects of standing and sitting in the workplace, she says regular exercise is not enough to counteract the amount of sitting many of us do.

"People can meet the physical activity guidelines and do a 30-minute run every day, but if they're spending 10 hours of the day sitting, then it is not going to wipe out the effect of all the sitting," Thorp says.

"Stand up. Move more, more often. These should be your mantra for daily living."

The bottom line, she says, is that we all need to move as much as you can throughout the day.

"Stand up. Move more, more often. These should be your mantra for daily living."

How much sitting do we do?

Sitting and lying down are known as sedentary behaviours that require a very low level of energy output. (Activities are often measured in METs – Metabolic Equivalent of Task – sedentary activities range between 1 and 1.5 METs, walking at a moderate pace ranges between 3-3.5 and jogging is about 7.)

Research suggests that most of us are spending more than half of our day being sedentary.

The Australian Diabetes, Obesity and Lifestyle Study found adults spend:

➤➤ 57 per cent of their time engaged in sedentary activities
➤➤ 38 per cent of their time engaged in light intensity activities
➤➤ About 5 per cent of their time doing moderate-to-vigorous activity.

Interestingly, these findings are based on data collected using devices known as accelerometers, giving researchers a more objective measure of how sedentary – or active – people are.

What the research shows?

The growing body of research into sedentary behaviour clearly shows that prolonged sitting is a risk factor for metabolic syndrome, heart disease, type 2 diabetes, some cancers, obesity and early death.

A recent University of Sydney study, looking at more than 222,000 adults aged 45 and over, found that men and women who sat for 11 hours or more a day had a 40 per cent greater risk of premature death, than those who sat for less than four hours.

Another recent US study, found adults who were most sedentary (i.e. were sedentary for more than 10.8 hours a day for men, 10.1 hours a day for women) had more than three times the risk of premature death compared to those who were least sedentary (i.e. were sedentary for less than 7.6 hours a day for men, 7.2 hours a day for women).

While a 2010 Australian study compared people who watched television for four hours a day to others who only watched for less than two hours a day. The researchers found those who watched for more than
four hours a day had an increased risk of premature death of 46 per cent. This was not because of the standard of entertainment on offer, but because watching TV tends to be the most common sedentary leisure activity. (It’s been estimated that for every hour of television you watch over the age of 25, your life expectancy is reduced by 22 minutes.)

Why is sitting so bad?

Researchers are still trying to understand exactly why it is that sitting has such a deleterious effect on our health.

But Thorp says it appears to be related to the enzymes that help to regulate blood fats and sugars, which are released as certain muscles contract when you stand.

“Muscle contraction is a major contributor to many of the body's regulatory processes, such as breaking down glucose, and when we sit our leg muscles are essentially inactive,” she says.

“Loss of local muscle contraction during prolonged sitting is shown to ‘slow down’ the production of key enzymes involved in removing fats from the blood and exercising won't prevent this ‘slowing down’ from occurring.

“It is also shown to reduce the uptake of glucose from the blood stream into skeletal muscle.”

However, you only need to stand up or take a short walk in order for your leg muscles to contract, which can help prevent those key enzymes from being switched off.

“Our group recently reported that breaking up prolonged sitting every 20 minutes with a two-minute walking break ameliorates the adverse effects,” she says.

“The message we want to get out is that you don't have to spend the entire day standing, but you do want to break up your sitting time.”

Get out of your chair

However, Thorp acknowledges standing up all day is not necessary.

“We don't advocate that people spend the whole day standing. There is literature around that shows that standing all the time can be bad for you,” she says.

“The message we want to get out is that you don't have to spend the entire day standing, but you do want to break up your sitting time.”

Thorp recommends sitting for no more than 30 minutes at a time and standing as much as possible throughout the day.

Organisations, such as the Australian Heart Foundation and the American College of Sports Medicine, have released recommendations about the need to reduce the time we spend in our chairs and what changes you need to make.

Some of these include:

➤ Standing up whenever you use the phone
➤ Doing household chores when watching television, e.g. folding clothes and ironing
➤ Standing or walking for meetings
➤ Walking or riding a bike to work, school or the shops
➤ When driving park your car further from your destination and walk some of the way
➤ Getting on/off public transport one stop earlier and walk the rest of the way
➤ Standing up when using public transport, if possible.

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What’s more, our research found the impact of sedentary behaviour linked to television viewing rivals that of other major risk factors.

In the 1950s, Professor Jerry Morris reported that conductors on London’s double-decker buses had a lower risk of coronary heart disease than the drivers of those buses, who sat all day.

As the conductors ran up and down the stairs at work, the inference from the observation was that physical exercise was good for health.

Much research followed but surprisingly, it took more than 50 years to discover what might have been obvious from the start: the reverse is also true – too much sitting is bad for health.

AUSTRALIAN STUDY

We used previously published data on the impact of television viewing on death from analyses of the Australian Diabetes, Obesity and Lifestyle Study (AusDiab) and national population and mortality figures to ascertain the degree of risk posed by television viewing.

Six hours of television a day amounts to almost five years of lost life. That means every single hour of television viewed after the age of 25 reduces life by 22 minutes.

We wanted to answer questions such as how much higher would the life expectancy of Australians be if they watched no television at all, and how does the effect of television viewing compare with other major risk factors, such as a lack of exercise, smoking and obesity.

The results are striking: our study indicates that if Australian men never watched television, they could expect to live nearly two years longer than they do now. For women, the figure was one and a half years.

Six hours of television a day amounts to almost five years of lost life. That means every single hour of television viewed after the age of 25 reduces life by 22 minutes.

And because Australians are exposed to an average of about two hours of television a day, the associated disease burden may be bigger than that of a lack of exercise, being overweight or obese, or even smoking.

So it appears that many Australians are hastened to their death by their television sets.

HOW COULD THIS BE?

Television viewing is a marker for time spent passively sitting.

It’s likely that other sedentary activities such as sitting in front of a computer carry an equivalent risk. But it’s much more difficult to measure these compared with asking people how much television they watched in recent memory.

Theoretically, viewing time also comes with exposure to advertising for unhealthy foods, so perhaps people who watch a lot of television have other habits that kill them.

Our study adjusted for a long list of these including age, gender, leisure-time exercise, waist circumference, smoking, education, total energy intake, alcohol intake, diet quality, hypertension, total cholesterol, medication use, previously reported cardiovascular disease, and glucose tolerance status, among others.

Statistical correction for such factors is never perfect because they can only be measured with limited accuracy, but much of their effect was removed by our adjustment.

And the effects of dietary factors and physical activity are estimated in exactly the same way, so if our results are biased, then much of our knowledge about risk factors for
chronic disease is also called into question.

Because it is self-reported, measurement of television viewing is imperfect, and this could in theory have led to an underestimation of its effect on mortality.

And what if we’ve got it all the wrong way around? Perhaps people who are in bad shape and close to death watch more television?

We can’t rule that possibility out although we did exclude persons with a known history of cardiovascular disease.

**OTHER STUDIES**

An optimist might think it is all simply due to chance but that’s unlikely. Since the AusDiab paper came out in 2010, two other studies on the same topic have reached similar conclusions.

A study in England found a 4 per cent risk of mortality for every hour of television (but the participants in that study were a bit older and relative risks tend to go down with age because people increasingly die of unrelated causes).

And Scottish data showed a 7 per cent increase in mortality.

A recent meta-analysis of the three studies in the *Journal of the American Medical Association* reports a weighted average effect of 6 per cent, with a range of 3 per cent to 9 per cent.

That means each hour of television shortens the viewer’s life by at least eight minutes and as much as 25 minutes.

In all, it seems likely that television viewing does increase the risk of chronic disease and death. Future research can lead to better estimates of the extent of that risk.

**Health recommendations for children include limiting viewing time. Our study suggests that adults would do well to follow the same advice.**

**WHAT THIS MEANS FOR YOU?**

Watching television is a form of sedentary behaviour – the absence of physical activity, as it were.

Until recently, physical activity was measured only with questionnaires. Such surveys are reasonable at picking up deliberate physical exercise, but bad at measuring light physical activity.

This led to recommendations for exercise, and talk of a level of physical activity so low that it confers no health benefit.

These days, pedometers and accelerometers can measure almost every step, and it seems increasingly likely that every step counts.

Health recommendations for children include limiting viewing time. Our study suggests that adults would do well to follow the same advice.

_Lennert Veerman is Senior Research Fellow, School of Population Health at the University of Queensland._
Sedentary behaviour is a term used to describe time spent doing physically inactive tasks that do not require a lot of energy. Watching television is a common childhood sedentary activity. Children who spend long periods of time inactive are more likely to have poorer physical, social and intellectual development. Planning and encouraging physical activity during the time children are awake is an important part of promoting a healthy lifestyle. Limiting long periods of time where children are inactive is just as important as making sure they do enough activity.

Sedentary tasks can be grouped as either ‘productive’ or ‘non-productive’. Productive sedentary behaviour and quiet ‘down time’ are necessary for young children.

Children who spend long periods of time inactive are more likely to have poorer physical, social and intellectual development.

**NON-PRODUCTIVE SEDENTARY BEHAVIOUR**
- Watching television and DVDs for leisure
- Playing screen games such as handheld, video or computer games
- Being restrained for long periods of time, such as in a car seat, high chair, porta-cot or stroller.

**PRODUCTIVE SEDENTARY BEHAVIOUR**
- Reading, listening to stories or looking at books
- Quiet play, such as art and craft activities, drawing and puzzles
- Sleeping.

**Recommendation**
Children younger than two years of age should not spend any time watching television or using other electronic media (DVDs, computer and other electronic games).

**WHY NO SCREEN TIME FOR CHILDREN UNDER TWO?**
Babies should not be restrained or kept inactive (during awake time) for long periods, especially in front of the television. Before babies can walk, they need plenty of time to practise movements such as reaching, kicking and feeling. As babies become more mobile and start crawling and walking, they continue to need plenty of time to move freely and creatively, practise new movements, and play with others.

Screen time is not recommended for babies and children less than two years of age, particularly in the early childhood setting, because it may:
- Reduce the amount of time they have for active play, social contact with others and chances for language development
- Affect the development of the full range of eye movement
- Reduce the length of time they can stay focused.
Recommendation

For children two to five years of age, sitting and watching television and the use of other electronic media (DVDs, computer and other electronic games) should be limited to less than one hour per day.

WHY LIMIT SCREEN TIME FOR TWO- TO FIVE-YEAR-OLDS?

Most children will be exposed to screen time at home, and for many children this will be excessive. In the early childhood setting, it may be decided that screen time is not included in the program, or only limited to special occasions.

In toddlers and pre-schoolers, long periods of screen time have been associated with:

- Less active, outdoor and creative play time
- An increased risk of being overweight
- Unhealthy eating habits
- Poorer social skills
- Fewer opportunities to develop thinking skills
- Slower development of language skills and short-term memory
- Television-viewing habits that may continue throughout childhood.

Recommendation

Infants, toddlers and pre-schoolers should not be sedentary, restrained or kept inactive for more than one hour at a time – with the exception of sleeping.

Sometimes children are left inactive for longer than they ought to be, in places such as high chairs, strollers or car seats. Even during outdoor play time, some children may stay inactive.

Young children who have adults to interact with during play are more likely to be active. Be prepared to join in with play and help less active children be more active during play time.

This can include encouraging children to:

- Walk or pedal instead of always being in a stroller or car seat
- Help with packing up toys, clothes or shopping
- Play with simple items, such as buckets, dress-up clothes or old boxes and containers
- Make big movements and try new things
- Play outdoors during daylight hours.

CHILDREN FROM ALL CULTURES

Different cultures may have different values and traditions concerning sedentary behaviour and down time.

When working with families from different cultures:

- Find out what they do for quiet or down time
- Ask parents to provide quiet games and books that are representative of their culture
- Inform families about screen time and physical inactivity recommendations.

A large majority of children and adolescents in Australia exceed the recommended maximum of two hours a day of screen use for leisure and that time is increasing.

3. Experience behavioural, learning and attentional problems or disadvantages (exacerbating the above physical, mental and social health disadvantages), for example:
   - Attention and concentration problems
   - Less reading time
   - Lower academic achievement
   - Reduced creative imagination and creative play
   - Higher amounts of aggressive behaviour.

While excessive screen use is thought to be associated with negative health and wellbeing for youth, higher time outside and contact with nature is related to positive physical, mental and social health and behaviour and learning. Research indicates that being outside or contact with nature is positively associated with childrens’ and adolescents’:
   - Physical activity participation
   - Likelihood of being a healthy weight
   - Development of motor skills
   - Learning and development (personality development, cognitive functioning, attitude and school behaviour)
   - Mental health and management of stress.

Contact with nature also enhances behaviour of children with learning or behavioural difficulties:
   - Children with attentional deficit hyperactivity disorder perform better after contact with nature, and
   - Children displaying delinquent behaviour benefit from nature-based programs.

The findings from this review indicate that strategies which successfully limit the time children and adolescents use screens while increasing the time they spend outside and in contact with nature are likely to lead to far-reaching positive physical, mental and social health and behaviour and learning benefits.

Dr Karen Martin is Research Assistant Professor at the School of Population Health, The University of Western Australia.
ACTIVE PLAY IDEAS

➤ Children will love running and playing with streamers made from colourful ribbons or scarves, hoops and balloons
➤ Catching and hitting games using a variety of objects and balls – you may like to try bubbles, bean bags and a range of balls of differing sizes
➤ Create an obstacle course using items from around the house – try boxes, sheets, chairs and tables – kids will love exploring under, over, through and around the course that you create
➤ Encourage jumping games – make an imaginary river using a rope, or an imaginary log using a pillow for children to jump over
➤ Digging and building in the sand, either at the beach or in a sand pit
➤ Children can help in the garden, maybe even create a small garden (in pots is fine if you have limited space) for children to tend and care for – digging holes for plants and carrying water cans are great ways to be active
➤ Playgrounds offer a wide variety of experiences for children to be active – climbing, swings and slides are great opportunities for active play
➤ Playing with pets is fun way to get kids moving.

SET VIEWING TIME AND CONTENT LIMITATIONS FOR CHILDREN – encourage your child to have an active role in selecting what TV programs they wish to view within these limitations
➤ Avoid TV during times of the day when kids could be outside engaging in active play and exploration – if necessary record programs so they can be viewed at a more suitable time

TRY TO HAVE TV-FREE MEaltimes – allowing time for family conversation and interaction.

➤ Try to have TV-free mealtimes – allowing time for family conversation and interaction
➤ Make your children's bedrooms screen free zones
➤ Try to supervise your child during their TV watching and other electronic media use – parental involvement has been shown to have a positive impact on the educational value of these activities
➤ Turn the TV off when the scheduled program is finished – having the TV on in the background can distract children while they are playing or interacting with others
➤ Be prepared with active play alternatives when the kids want to turn on the TV.

TELEVISION VIEWING

These tips may help to develop positive TV viewing habits with your 2-5 year old:
We’re famous for being a sporting country, but how many of us Aussies live up to our energetic reputation? The bad news is that around 75 per cent of us aren’t on the go enough to meet the minimum daily recommendation for exercise … so here are some good reasons to get off the couch and start moving!

WHY DO YOU NEED TO EXERCISE?

Do we really need to exercise? Sometimes even the thought of it seems hard. The truth of the matter is that you’ll be a healthier person for it and not just in terms of cardiovascular fitness. Exercise prevents disease. As an active person, you’re less likely to develop cardiovascular disease, type 2 diabetes and osteoporosis, have a stroke or get certain types of cancers, such as colon and breast cancer. Physical inactivity is ranked just behind cigarette smoking as a cause of ill health.

Short-term benefits of regular exercise

Exercise regularly and you will:
➤ Increase your endurance
➤ Have healthier muscles, joints and bones
➤ Increase your metabolism
➤ Have more energy
➤ Experience a sense of wellbeing and be better able to cope with stress
➤ Be better able to get to sleep and stay asleep.

HOW MUCH EXERCISE DO YOU NEED?

Just how much exercise do you need to see these benefits? You certainly don’t have to join a triathlon club – even moderate exercise such as regular walking or climbing the stairs can be protective no matter how late in life you start.

One thing experts agree on is that your exercise, at the very least, has to be moderately intense and has to be regular. The National Physical Activity Guidelines for Australians recommends at a minimum 30 minutes of moderate physical activity – like walking – on most days of the week. How do you know if you’re being moderately active? A good test is to see if you can talk easily while you’re exercising. If you can, you are exercising at a light to moderate level. Once your breathing makes it too hard to talk, you know you’ve increased the intensity of your workout!

One thing to remember is that the longer and more intensely you exercise, the greater the benefit. Researchers have found a positive correlation between the length and intensity of physical activity and the reduction in risk of coronary events such as heart attack.

But even short periods of light exercise and daily activities are beneficial if you want to prevent obesity and diabetes. New research shows that sitting around for long periods of time can increase your blood glucose levels – even if you fit a 30-minute session of exercise in – so stay active and complement your 30 minutes of exercise with regular light activity.

If you haven’t exercised for a while or you want to significantly increase your exercise level, it is advisable to speak with a health professional about designing an exercise plan. Many injuries are caused by exercising too much, too quickly, or by overuse.

WHAT TYPES OF EXERCISE ARE THERE?

There are three main types of exercise, each one has a different effect on your body:
➤ Aerobic exercise such as swimming or running increases your cardiorespiratory fitness and endurance. This is the capacity of your heart and lungs to supply oxygen-rich blood to your muscles.
so they can produce energy for movement over a sustained period.

- Flexibility exercises such as yoga and pilates improve the full range of motion of your muscles and joints.

- Resistance exercise such as weight-lifting increases your muscle strength by requiring your muscles to lift, push or pull against something. This type of exercise can also increase bone density and help prevent osteoporosis, which is important as you get older. There are several different ways you can strengthen your muscles:
  - Isotonic strength training – during this type of training your muscles shorten as they contract. For example when you flex your bicep muscle or do a sit up. This is the most common type of muscle contraction.
  - Isometric strength training – during this training the muscle contracts, but the muscle length remains the same. This type of muscle contraction is popular with bodybuilders and occurs when you try to move an immovable object, like pressing against a door frame.
  - Eccentric – this type of training is the opposite of isotonic training. Your muscles lengthen as they contract, for example when you run down hill.
  - Isokinetic strength training – this is similar to isotonic training, except that your muscle contracts at an even speed, for example when your arm moves evenly through the water when swimming.

**CHOOSING THE BEST EXERCISE FOR YOU**

**Getting fit**

There are several parts to your all over fitness: your cardiorespiratory endurance, your muscular strength and endurance, and your flexibility. Chris Tzar, exercise physiologist from the Lifestyle Clinic at the University of New South Wales, says ideally your exercise regime for getting fit should work on all three types.

“
You certainly need strength, cardiovascular endurance and suppleness, but the greater emphasis should be on cardiovascular fitness.”

**Cardiovascular**

“
In terms of health, cardiovascular fitness is one of the greatest predictors of mortality, and has the greatest impact on your ability to do day to day activities. It is recommended you do cardiovascular exercise from between three and five times a week, for either 20 minutes at high intensity or 45 minutes at a lower intensity.”

You can test your progress by monitoring your heart rate during exercise. If you do the same exercise every week as a test, your heart rate should be progressively lower week to week as your fitness levels increase.

**Strength training**

Strength training should pop up in your schedule around two to three times a week. Tzar says the length of your session is less important than making sure you address all the major muscle groups, preferably during exercises that use them simultaneously.

“
Strength exercises that use several parts of your body, rather than just isolating one part are better. You’re better off mimicking activities that you find in daily living so they help you cope better.”

“For older people, strength training is particularly important for bone density, maintaining muscle mass and preventing falls. It’s also important in adolescence when your bones are developing their peak density because if you fill the tank up then, your bones will take longer to become osteoporotic in older age.”

**Flexibility**

Tzar says flexibility is important for muscle balance, good posture and joint movement, and helps prevent orthopaedic issues later in life.

“If the muscles around your hip are too tight, for example, this can produce problems in the joint, and can cause the cartilage to wear away.”

**The ideal combination**

Tzar suggests a combination of walking or jogging, cycling or swimming to increase your cardiovascular fitness, and strength training with either weights or doing callisthenic exercises at home or in the park. Callisthenics, like push-ups or chin-ups, use your body weight against gravity and don’t require equipment so you can do them anywhere.

For flexibility, Tzar says it’s important to do stretches that work on the muscle groups that have common problems with flexibility: the shoulder and chest area, the hips and knees, the back, as well as the gluteals, hamstrings and hip flexors.

**Losing weight**

Tzar says that getting fit and losing weight go hand in hand.

“But it’s important to remember that it’s body-fat loss, not muscle loss that’s important for your health. If you just diet and don’t exercise, a lot of the weight you lose could be muscle tissue and fluid.”

It’s also important to remember that both structured exercise, like going for a jog, and incidental exercise, like walking to the shops to buy dinner, are both important and you shouldn’t increase one at the expense of the other, says Tzar.

“Some people might start driving to the shops because they’re tired from exercise, and then find that their general physical activity levels haven’t increased. Remember to keep taking the stairs because that kind of exercise is also really important.”

So just how much exercise do you need to lose weight?

One important factor in losing weight is how you balance stocking up on energy and burning it off. If you’re eating more than you burn off with your current amount of exercise, you’re most likely putting on weight. If you do more exercise – so that you’re burning more energy than what’s in the food that goes in your mouth – eventually you’ll burn off body fat.

If you’re after a rough guideline, take the minimum daily requirement – 30 minutes of moderate exercise most days of the week – and double or even triple it, depending on how frisky you’re feeling. At 30 minutes a
day you’re protecting yourself against heart disease and other illness and at 60 to 100 minutes you’ll be waving goodbye to those jiggly bits.

**Fighting depression**

More than a million of us suffer from some form of mental illness, including depression and anxiety. Encouragingly, both aerobic exercise and strength training has been successfully used in treating clinical anxiety and depression. One controlled trial found exercise training was as effective as antidepressant medication in older adults, albeit with a slower onset of benefits. We’re still unsure of how much you need to exercise to feel the benefits or even why this relationship exists, but researchers are looking for answers, so watch this space.

**Recovering from injury**

Pretty much everyone knows someone who’s sprained their ankle playing soccer or pulled a muscle running or done their back in gardening.

Whatever your injury, Chris Tzar says it’s important to see a health professional before you continue exercising. Your GP can give you advice or give you a referral to an exercise physiologist, both of which are covered by Medicare.

Even more important than recovering sensibly from an injury is protecting yourself from one in the first place. Most injuries come from overuse or going too hard, too fast.

To make sure you don’t overdo it at the beginning of your fitness program, Tzar recommends starting off slow and try out some Fartlek training.

“Fartlek training is when you alternate between a work and active rest period, for example walk-run-walk-run. You might start off with five minutes of walking and two minutes of running, and you gradually increase your working period each time you go out. Eventually you’ll be mostly working.”

For the avid exerciser, a week off from exercising every 12 weeks or so will help prevent overuse injuries. “You allow the soft tissues to recuperate,” says Chris.

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**PHYSICAL ACTIVITY: GETTING STARTED AND SETTING YOUR GOALS**

**A FACT SHEET FROM NUTRITION AUSTRALIA**

So why should physical activity be part of your daily routine?

Regular activity or sport is an essential part of a healthy lifestyle and is recommended for all people. For some, the benefits of physical activity include staying in shape or enjoying the company of fellow exercisers. Others undertake sport to put themselves to the test. A very few may win gold medals or break records as a result. However, personal satisfaction is the main motivator driving people to achieve sporting goals or to maintain good health via an active lifestyle.

- It can make you feel good.
- It can boost your self-esteem.
- It can help relieve stress.
- It can improve concentration.

Physical activity can also reduce the risk of developing diseases such as heart disease, some cancers, diabetes and osteoporosis. Moreover, regular activity is an essential component in the prevention and treatment of obesity, a major health problem in Australia.

**NOW THAT’S ENOUGH TO GET YOU MOVING!**

**Setting your goals**

Those who have decided to take an active role in improving their health by increasing their activity levels in daily life will be aware that it is important to set goals. These goals need to be realistic, and should be re-evaluated from time to time. You can set goals that are suitable and appropriately formulated using the word F.I.T. The F.I.T. formula includes the following:

- **F** – **frequency**: how often do you plan to exercise?
- **I** – **intensity**: how hard should you push yourself?
- **T** – **time**: how long should you exercise for?

Keeping the F.I.T. formula in mind will help you to set goals and to monitor your improvement as time passes.

When setting goals for physical activity, it is important to choose activities that are enjoyable and satisfying – activities that you are more likely to want to repeat frequently. Try and vary the activities that you choose so that you don’t become bored or disinterested.

You can use the 4 S’s of fitness to help you think of a variety of activities that will help to keep you in good shape and free of injury.

The 4 S’s of fitness are:

- **Stamina** (cardiovascular): endurance exercise that is good for the heart.
- **Suppleness** (flexibility): muscle stretching to prevent injury.
- **Strength** (muscle building): building muscle to support the body and to increase metabolism.
- **Speed** helps increase metabolism.

*(REMEMBER: if you are over 35 years and/or embarking on an exercise program after a long period of inactivity it may be advisable to see your doctor before starting an exercise routine.)*

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**Does stretching before exercise help?**

A review of several studies in 2002 revealed that stretching before and after exercise doesn’t stop you from getting aching muscles the next day. The review looked at two studies on army recruits in military training, which both found that stretching before you exercise doesn’t reduce your risk of injury. But remember stretching is different to warming up and research has shown a good warm-up can reduce chances of injury.

By Maryke Steffens. Published 10 May 2007.

ABC Health & Wellbeing, Fact File
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Along with healthy eating and good sleep patterns, physical activity is a vital part of keeping our bodies fit and strong. It keeps our energy levels up, helps reduce stress levels and keeps us feeling good.

MODERN LIVING

We are all spending much more time sitting these days. We work and play in seats more than ever before. Many jobs are now desk jobs, replacing physical labour. And TV, computer games and DVDs have become a big part of people's spare time.

So exercise is not a part of daily life like it used to be. We now have to make an effort and factor exercise into our lives. But it doesn’t have to be a chore or cost money, exercise should be fun and it can be included into your normal day.

Remember ...
any movement is an improvement!

➤ Climb stairs instead of using lifts or escalators.
➤ Ride bikes or walk whenever you can. You only need to plan your day a little better and you will save money and the environment.
➤ Walking the dog is also a good way of improving your fitness, and your dog will love it too.
➤ At lunchtime, go for a walk with a friend instead of sitting down talking – you can talk while you walk. Get out into nature!
➤ Have a game of soccer, footy, cricket or basketball (or any other game) during your lunch break.
➤ Throw a ball to each other – this improves coordination and can be fun.
➤ Go dancing with friends.
➤ Cook healthy meals at home. Dancing around the kitchen and lifting heavy pots can be good exercise, you will save money on food and learn new recipes.
➤ Make use of whatever is around you to fit your physical activity into everyday life.
➤ Add more to your own list – let your imagination go wild.

BENEFITS OF BEING PHYSICALLY ACTIVE

➤ You feel fit, energetic, strong and healthy. If you’ve ever suffered from a lack of energy, say after an illness such as glandular fever, you’ll know how good it is to have a healthy body. Feeling fit, energetic, strong and healthy makes you feel positive about life.
➤ Physical activity releases endorphins – these are the body’s natural ‘feel good’ chemicals – no wonder getting physical makes you feel good!
➤ Physical activity reduces stress and tension, making you one relaxed person.
➤ Exercise can improve mental health and reduce depression. Studies have shown that ‘green’ or outdoor physical activity is best if you can do it.
➤ Exhilaration – enjoy the thrill of some activities, like climbing a rock wall or BMX racing.
➤ Social enjoyment, like making new friends, enjoying the fun of a social team game together, or the chatting while you walk, play tennis or bike ride together.
➤ Increased skills – practice means getting better at what you do.
➤ More physical activity means you can eat more without gaining kilos.
➤ Your muscles become stronger with more physical activity.
➤ You have a better night’s sleep when you are regularly active.
➤ You have more energy and feel less tired.
➤ Being healthy means looking your glowing best – this can increase self-esteem and positive self-image.
➤ You can use strenuous physical activity as an effective way of reducing your anger.
➤ Any physical activity that involves an impact, e.g. walking, running, aerobics etc, helps to keep calcium in your bones, keeping them stronger for longer. This will make you stand tall and strong and help prevent osteoporosis when you’re older.
➤ Physical activity means a strong heart and lungs – they’ll last longer.

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WHAT IF YOU HAVEN’T BEEN ACTIVE FOR A WHILE?
➤ It may all seem like a huge effort at first, but you will be surprised to find that the more you do, the more you feel like doing. Sometimes, the hardest thing is making a start.
➤ Beginning a new activity with a friend can be fun, and can keep you both motivated.
➤ If you’ve been physically inactive for a long while, you may feel that you are not ready to launch into a full on fitness program. This is okay. It is better to start slowly and build up. Nothing is more likely to turn you off than overdoing it and ending up with aches and pains in every muscle (including places where you didn’t even know you had muscles).
➤ If you are about to join a gym, ask the trainer if they can design a beginner’s program for you, and make sure they will show you how to do exercises and use equipment properly.
➤ If you have had health problems you might want to get a check up before starting a new activity.

WHAT DO WE MEAN WHEN WE TALK ABOUT FITNESS?
When people talk about fitness, they are usually talking about three types of fitness. These are stamina, strength and flexibility.

Stamina and endurance
Stamina or endurance usually refers to the body’s ability to do physical activities for long periods of time.

Strength and power
Physical activities that increase strength are called anaerobic activities. Anaerobic activities aim to increase physical strength, power and muscle capacity, allowing you to perform movements such as jumping and sprinting. Strong muscles also support and stabilise bone joints (such as ankles, knees, hips, shoulders and backs), reducing the risk of injury.

Resistance training is one way to improve power and strength. Examples are push ups and using light weights.

Flexibility and suppleness
Flexibility and suppleness refers to your body’s ability to perform its full range of movements without pain or restriction. If tendons and muscles become tight you are more likely to get injuries such as pulled or strained muscles and joint soreness. Gentle stretching will improve flexibility.

Be careful ...
If you find you’re spending too much time exercising or working out in a gym, you could be overdoing it. This can be harmful to your health.

Steroids
Some people push drugs called steroids, saying they can make you fitter, stronger and faster.

Taking steroids is very dangerous and can lead to heart failure and damage to other vital organs, causing premature death. Steroids can have a big effect on mood (some people get very angry). Many steroids are actually designed for farm animals and racehorses, not people! It is not worth risking your life for slightly bigger muscles or getting that bit faster. Say NO if you are offered steroids!

CHOOSING THE RIGHT KIND OF PHYSICAL ACTIVITY FOR YOU
Any kind of regular physical activity can improve your health, fitness levels, and the way you feel about yourself. Choose activities that you enjoy, you can afford, and can fit in to your current lifestyle.

There are lots of different kinds of physical activities to choose from. It is simply a matter of finding what’s right for you.
➤ Team sports can be a great way of having fun and improving your fitness at the same time. This can be a good way of making new friends.
➤ Some people prefer to take up individual activities that they can do whenever and however they want, without having to rely on other people or time schedules set by clubs and gyms. Bicycle riding, swimming or walking are some of these types of activities. These can also be done with family or friends and can be part of a day out.
➤ There are many other activities you can do with a friend anytime. Walk together on the beach, a park or through the bush, have a game of golf or tennis, swim. Go roller blading, skate boarding, kick a ball around, or ‘shoot hoops’.
➤ There are holidays built around fun activities like skiing or wild adventure type holidays where you take in white water rafting, canoeing, mountain hiking and abseiling for example. You can also get involved in these kinds of activities on a one-off basis. Look in your phone book.
➤ Try your local gym – most local gyms and many community centres offer organised fitness classes. Gyms often have weight equipment where you could try weight training. A word of warning here … your bones need to be fully developed to start training with weights otherwise you could cause health problems a few years down the track. You should have finished growing before using weights. Get professional advice before starting weight training.
➤ Community centres often offer activities such as yoga, tai chi and self defence classes.

BIKE RIDING
Riding a bike is one of the easiest, safest, and most fun ways to get exercise.
➤ Bike riding saves you money on transport costs.
➤ Bike riding helps the environment.
➤ Riding to work or study can often be quicker than other forms of transport.
➤ Safety – People often feel that riding on the road is dangerous, but studies have shown that bike riding is one of the safest physical activities you can do, safer than

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netball and basketball! The more people that do it the safer it gets too. Just make sure you wear a helmet and obey road rules.

THE IMPORTANCE OF WARMING UP AND COOLING DOWN

It is important to do some warm up exercises before you begin any session of sport or physical activity. Warming up prepares the body for physical exertion, and reduces the chances of getting cramps or serious injuries. Walking, riding an exercise bike, gentle aerobic movements or dancing are good ways of warming up.

Cooling down properly after exercising will reduce the risk of muscle soreness or stiffness the next day. You can use the same kinds of physical activities that you used to warm up.

Stretches should also be a part of warming up and cooling down afterwards. If you watch a lot of sport, either live or on television, you have probably seen athletes stretching and loosening up before taking part in a game or event. Serious athletes aren’t willing to risk pain, injury and poor performance by not preparing their bodies for increased activity, and neither should you!

RESOURCES

South Australia

➤ Check out local gyms and community centres in your area to find out what is available to suit your needs, available times and finances. Also be sure to find out exactly what you are getting for your money!

➤ If you wish to become involved in team sports, choose the sport you are interested in, and find out what is available in your area, either at social or competitive levels. Check the phone book for local clubs or organisations, ask your local council or ask friends who may already be involved in your chosen sport.

➤ Check out the Office for Recreation and Sport website www.recspor.sa.gov.au

➤ Wheelchair sports SA www.wheelchairsports-sa.org.au

➤ Recreation Link-up – YMCA of South Australia’s online recreation database. This database contains a huge range of recreational and social opportunities to explore and choose from, including: sports, arts, games and personal development activities. http://reclinkup.ymca.org.au

General

Want to find out about the benefits of bike riding. Check out the Cycling Promotion Fund: www.cyclingpromotion.com.au

Above all – have fun getting physical.

REFERENCES

➤ Government of Australia ‘A healthy, active Australia: information for young people’ www.healthyactive.gov.au


The information from this site should not be used as an alternative to professional care. If you have a particular problem, see a doctor, or ring the Youth Healthline on 1300 13 17 19 (local call cost from anywhere in South Australia).
Aerobic exercise: what you need to know

FACT SHEET ADVICE PROVIDED COURTESY OF THE MYDR WEBSITE

**What is aerobic exercise?**

Aerobic exercise refers to exercise that requires the consumption of substantially more oxygen than at rest. It involves repeated rhythmic movements of the large muscles of your body, such as those in your arms or legs. Examples of aerobic exercise include brisk walking, jogging, swimming, cycling, dancing, cross-country skiing, ice-skating, kayaking, roller-blading, and aerobic dance (often simply called aerobics).

Because you need more oxygen to do aerobic exercise, you breathe more rapidly and deeply to get extra oxygen into your lungs. Your heart also beats faster to deliver more oxygen-carrying blood from your lungs to your muscles.

How fast your heart beats and how rapidly you breathe will depend on how intense (hard) the exercise is, with gentle exercise causing only slight increases in breathing and heart rate, but more vigorous exercise resulting in greater increases.

**AEROBIC VERSUS ANAEROBIC EXERCISE**

The term ‘aerobic exercise’ comes from the fact that the energy used during this form of exercise is linked to the consumption of oxygen (aerobic metabolism). Aerobic exercise is of a light to moderate intensity, and is characterised by your ability to maintain it for a prolonged duration (many minutes to several hours) because we can support it entirely through aerobic metabolism that does not cause us to fatigue very rapidly. Very strenuous exercise, such as running fast or rapidly cycling uphill uses energy at a very fast rate, and will exceed our muscles’ capacity to work aerobically. Exercise at these higher intensities does involve the use of oxygen, but also requires your muscles to undertake some metabolism without oxygen (anaerobic metabolism), which results in the production of fatiguing factors that cause you to have to slow down and eventually stop. The length of time before this occurs will depend on how much anaerobic metabolism is involved, with faster speeds causing fatigue to occur more quickly.

**How often should I do aerobic exercise?**

For general health and fitness benefits, such as reducing your risk of heart disease and improving your stamina, it is recommended that you do some form of moderate-intensity aerobic exercise on most, and preferably all, days of the week, for a minimum of 30 minutes. This 30-minute total can be made up of shorter 10-minute sessions, if this is better suited to your day. These short sessions will still provide health benefits and produce some fitness improvements, although to substantially increase your fitness you probably need to include at least some 30-minute sessions in your week.

To maintain your level of aerobic fitness, and the health advantages that go with it, you need to keep up a regular aerobic exercise routine. Giving up your routine or doing less exercise will cause your fitness and associated health benefits to decline.

It’s also important to avoid prolonged sedentary behaviour, such as sitting continuously for several hours. So, in addition to trying to incorporate exercise into your day, you should also try to break up your sedentary behaviours, for example by getting up and walking around your office for a few minutes every hour, or during the advertisement breaks when watching TV.

**For general health and fitness benefits, it is recommended that you do some form of moderate-intensity aerobic exercise on most days of the week, for a minimum of 30 minutes.**

**How hard should I do aerobic exercise?**

To improve your general health and fitness, moderate intensity aerobic exercise is recommended. However, if you are very unfit and currently do no exercise, even short bouts of light exercise will be of benefit. With continued participation, light exercise will produce fitness improvements that will enable you to progress to moderate intensity exercise.

As a general guide, ‘moderate-intensity’ aerobic exercise may make you slightly breathless, but still able to hold a conversation, and you should be able to sustain this level of exercise for at least 30 minutes. An example would be when going on a brisk walk, jog or bike ride with a friend.

If you want to be more exact in determining your exercise intensity, then you can use your heart rate as a guide. Moderate intensity exercise is likely to increase your heart rate to between 55 and 70 per cent of your maximum heart rate. More vigorous exercise will increase your heart rate even further.

**How to estimate your maximum heart rate**

You can estimate your maximum heart rate by subtracting your age in years from 220. For someone who is 40, for example, their maximum heart rate would be estimated to be around 220 minus 40, which is 180 beats per minute. So, for moderate-intensity exercise, this person would aim for exercise that produces a heart rate between 99 and 126 beats per minute (55 to 70 per cent of their maximum heart rate). However, this is just a rough estimate, and some people can have maximum heart rates more than 20 beats above or below that estimated for their age. So it’s a good idea to also use your perception of how hard the exercise is – the guide of working at an intensity at which you can still hold a conversation is a good one.

**Beta-blockers and exercise**

Beta-blockers are one type of medicine used to lower
blood pressure as well as treat angina and certain heart rhythm disorders. They work by slowing down the rate at which the heart beats. People taking beta blockers should talk to their doctor about their planned exercise programme. Moderate-intensity exercise is often recommended for people taking beta-blockers, but since the heart rate calculations described above do not apply to them, the best guide to determining a suitable exercise intensity is their perceived exertion.

**Measuring your heart rate**

If you do not possess a heart rate monitor, an easy way to measure your heart rate is to count your pulse for 10 seconds then multiply this count by 6 to calculate your heart rate per minute. To find your pulse, locate either your carotid artery (found on the side of your neck, just under your jaw bone) or your radial artery (in your wrist at the base of your thumb). Then gently place your index and middle fingers over the artery, but don’t press too hard or you will stop the flow of blood in that artery and not be able to detect a pulse.

Be aware that aiming for a target heart rate when exercising is a rough guide and may not work for some people. Older people who are physically fit may have a higher maximum heart rate than a younger, less fit person, and a higher maximum heart rate than that given by subtracting their age from 220.

**Progressing to greater levels of fitness**

If you are already active and getting 150 minutes of moderate-intensity exercise a week but want to attain a higher level of health and fitness, you will need to increase your aerobic exercise levels, either by exercising at a higher intensity and/or by doing more exercise.

Vigorous aerobic exercise – exercising at 70 to 85 per cent of your maximum heart rate – will result in further fitness and health gains. As a guide, at this intensity you will be breathing hard and finding it difficult to talk in full sentences between breaths. This level of exercise is more strenuous and should only be contemplated if you are already accustomed to regular moderate-intensity aerobic exercise. To prevent ‘overdoing it’, it is a good idea to alternate between moderate and vigorous exercise days with, for example, 30 or more minutes of vigorous aerobic exercise on 3 or 4 days a week, interspersed with days of 30 minutes of moderate-intensity aerobic exercise.

For people undertaking high-level sports training, a qualified trainer is likely to develop an individualised programme that varies from the above guidelines with regard to the intensity (how hard), the duration (how long) and the frequency (how often) of the aerobic exercise sessions.

**A balanced fitness programme**

For people of all fitness levels, aerobic exercise should form part of a balanced exercise programme that also includes 2 to 3 sessions per week of exercise to increase muscle strength, e.g. resistance training; and some stretching and flexibility work, e.g. a basic stretching routine or attending a yoga class. Needless to say, healthy eating and plenty of rest will complete a well-rounded fitness programme.

**Aerobic exercise precautions**

Appropriate aerobic exercise is recommended for almost everybody, regardless of age, but may need to be modified to ensure its suitability for people with existing health problems.

If you have existing health problems, are at high risk of cardiovascular disease, or have muscle, bone or joint injuries, check with your doctor before undertaking an aerobic exercise programme. Also, men aged over 40 years and women aged over 50 years who have not exercised regularly in the recent past should check with a doctor before undertaking a programme of vigorous physical activity. The level and type of exercise may be adjusted to ensure that it can be undertaken safely and effectively.

**Appropriate aerobic exercise is recommended for almost everybody, regardless of age, but may need to be modified to ensure its suitability for people with existing health problems.**

As with any form of exercise, be aware of over-exercising, either by doing aerobic exercise too hard, for too long or too often. This approach can lead to injury and abandonment of your fitness programme. Remember to build up gradually from your current activity level, and not to progress too rapidly. If you are new to regular aerobic exercise, several weeks of low- to moderate-intensity aerobic exercise are usually advised before introducing more vigorous aerobic exercise sessions. When you do increase your level of aerobic exercise, increase only one component – the intensity, duration, or frequency of your aerobic exercise sessions – at a time.

**It’s never too late to start**

An important health and fitness message is that people of all ages can benefit from regular aerobic exercise. And, if you are unfit, unhealthy or an older adult, you may have the most to gain from including it in your lifestyle.
Less than 40% of Australians achieve the minimum amount of physical activity recommended by government and professional organisations. This contributes to the fact 60% of Australians are overweight or obese.

Exercise and Sports Science Australia (and similar organisations overseas) recommend at least 30 minutes of moderate intensity exercise most days of the week, adding up to 150 minutes a week. The most commonly reported barrier to reaching these targets is a perceived lack of time. So it’s important to maximise the benefits of exercise in what little spare time we have.

But how can we get the most out of our exercise sessions? And is there a way to get enough exercise to stay healthy without spending 150 minutes a week?

**HIIT it**

Over the past few years, a number of laboratories have shown that High Intensity Interval Training (commonly known as HIIT) can provide similar – if not greater – health and fitness benefits as traditional exercise approaches. HIIT incorporates repeated bursts of intense exercise interspersed with periods of rest.

But it should be pointed out that, while HIIT is likely to improve overall metabolism, when it comes to fat burning and blood glucose control with minimal weight loss, calorie restriction through dieting is still the best way to lose body weight.

Most HIIT studies are performed on a bike, although some of the aerobic studies have been performed on a treadmill. Essentially, from the exerciser’s point of view, it shouldn’t matter, as long as the intensity is achieved.

Research has so far focused on three HIIT variations:

**Low-volume supra-maximal HIIT**

Low-volume supra-maximal HIIT involves four to six repetitions of 30 seconds of all-out exercise (approximately four times greater than maximum aerobic exercise intensity) with recovery periods of around four minutes.

The advantage of this approach is the small time commitment required. Clear benefits in terms of aerobic fitness and insulin sensitivity have been observed with just nine minutes of exercise a week (or 90 minutes total time commitment when you include rest).

But this method of training typically involves specialised equipment (such as electromagnetically braked stationary lab bikes) and due to the very high exertion and motivation required it may not be feasible for the general population.

**Aerobic HIIT**

Aerobic HIIT sessions on the other hand typically involve four to six four-minute repetitions of exercise performed at 80-90% of the maximum aerobic exercise intensity. These efforts are interspersed with one to three minutes of recovery with a single session taking up to 38 minutes.

As this is a lower intensity than the supra-maximal HIIT, it is deemed more achievable and has repeatedly been used successfully to treat patients with metabolic syndrome, hypertension and coronary artery disease.

But as the aerobic HIIT sessions are somewhat prolonged it doesn’t offer the same time-saving advantages as supra-maximal HIIT.
Low-volume maximal HIIT

Low-volume maximal HIIT sessions may provide a compromise between the previous two protocols. This strategy involves eight to ten one-minute bouts performed at maximal aerobic exercise capacity, interspersed with 60-75 seconds of light recovery, therefore offering significant time advantages, with a single session taking around 20 minutes.

Therefore its lower intensity (compared to supra-maximal HIIT) and shorter session duration (compared to aerobic HIIT) may make it suitable for sedentary or obese people, and those with existing metabolic conditions.

This form of HIIT has already been trialled successfully in type 2 diabetes patients, who demonstrated markedly improved blood-sugar control in just two weeks.

How low can you go?

We still don’t really know the minimum amount of exercise required to induce significant health and fitness benefits. But a recent study has cut down the exercise time even further, showing that just six ten-second all-out sprints, spread throughout a week can improve aerobic fitness and blood-sugar control.

Evidence is building that the HIIT approach to exercise can substantially improve aerobic fitness while providing a range of positive health outcomes, including better blood-sugar control, blood pressure and blood vessel function in a range of conditions such as obesity, metabolic syndrome, diabetes and heart disease.

Recent studies have challenged current thinking regarding how much exercise is needed to produce substantial health benefits.

These studies have challenged current thinking regarding how much exercise is needed to produce substantial health benefits. This has important implications for those who decide a 20-minute lunch break is insufficient for worthwhile exercise, or for those looking to make the most of their precious gym time.

Mass participation

Meanwhile, exercise physiologists and healthcare providers are keenly awaiting much-needed, large-scale randomised control trials on HIIT to be funded and carried out.

Those studies will give us the evidence to challenge current exercise recommendations and allow the incorporation of HIIT into the standard recommendations needed to treat and prevent chronic metabolic and cardiovascular diseases in the future.

While exercise preferences no doubt vary among individuals, and HIIT may not appeal to everyone, HIIT offers a solution for those with little time to be active.

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THE CONVERSATION


The Conversation | theconversation.com/au
Physical activity: keeping motivated

No matter how high your aspirations to be physically active, the benefits of activity can not be gained if intentions are not turned into action, writes Nutrition Australia.

Motivation is the key, though the question remains, ‘how is it possible to stay motivated?’ If you are finding it difficult to motivate yourself to be active, and to stay motivated, try some of the following helpful suggestions.

Find a buddy
It’s always great to exercise in the company of a friend. By exercising together you can support and encourage one another to keep moving and to keep activity regular.

Join a club
It may be easier and more convenient for some to slot into the timetable of a sports club or gym close to home or work.

Seek out a personal trainer or find out about a local fitness group
It’s always more fun when you exercise in a group, or have someone encouraging you to keep on going.

Compete against yourself
A number of products on the market today can help you maintain and even beat your personal best. Training watches can help you ensure that you are exercising at a level that maintains your heart rate at the most appropriate level for your training goals. Electronic pedometers can be used to monitor the number of steps you take on your daily walk or run. If you enjoy cycling, small computers can be mounted onto the handlebars of your bike to measure and calculate all sorts of physiological indicators for you to monitor and improve on.

Use your headphones
Research has shown that people who use headphones when walking walk further than those who do not! But forget the statistics, try it for yourself. Listen to the radio, your own music mix, or even your homework. If you use a stationary bike or walker, you could even try keeping the TV on in your exercise room. Remember to be extra alert when walking near busy roads – with headphones on your may not be able to hear cars approaching, so keep your eyes wide open and always look before crossing the road.

Train for a competition
Community events and competitions are carried out throughout the year, and can be used to set targets with regard to personal fitness. These events often aim to raise community awareness about specific issues, and by participating you can support an important cause whilst improving your health. Plus, it’s always motivating to see other people out exercising together.

Be creative
Repeating the same exercises over and over can get a little boring, but you may be able to keep yourself motivated by shaking up your exercise routine. Variety is the key! Engaging in different exercises increases the number of different muscles used and is more mentally refreshing. You could also be active with different friends – choose one for walking, one for swimming and another for tennis!

Record your progress
Get yourself a notebook or calendar and record the type and length activity completed each time you exercise. Monitoring your frequency of activity as well as your achievements can really help you stay motivated.

Read success stories
Fitness books, magazines and websites that tell stories similar to your own can be a great source of encouragement and can remind you that you not alone in your plight. Many people struggle to keep motivated when it comes to exercise, and reading about how others have overcome this challenge could give you some useful ideas that may help you overcome your own barriers.

Don’t push yourself too hard or feel guilty
If you push yourself too hard day after day you will get tired and sore and lose motivation very quickly. It’s important to moderate your exercise and vary the intensity and type of exercise you do. Don’t feel guilty if you have slipped out of routine for a few days. Just move on and start again.

And remember, the important thing is to keep moving regularly to gain the greatest health benefits.

Now that’s enough to keep you moving!

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How do your children spend their free time on the weekends and after school? Do they play in the backyard or at the park? Do they play on swings, ride their bikes, rollerblade or skateboard with their friends? Or do they spend long hours watching television or playing computer games?

Research shows that up to 25% of Australian children are overweight or obese. Overweight children often grow into overweight adults who are at risk of developing a number of health problems such as diabetes, hypertension, heart disease and some cancers.

Our lifestyle today has become increasingly sedentary. Both adults and children rely more on gadgets and services which reduce the amount of activity they participate in during their day. Lifts, escalators, remote control garage doors, TV’s and videos, internet shopping, home delivery of take-away foods – all of these reduce the amount of physical activity we engage in. In fact, research shows that Australian children now watch between 20-30 hours of television every week – and they don’t even have to move to change the channel.

Physical activity plays a major role in maintaining a healthy body weight and that is why it is so important to encourage children to keep moving. Children are naturally active; they simply need encouragement, ideas and suggestions for activities.

Infants (birth to 1 year)

Giving babies the chance to move around freely each day helps to keep their bodies and minds active. Moving freely allows babies to further develop their senses as well as good posture, strength and balance. Interacting with others through play gives young infants the opportunity to develop language and communication skills.

Some simple play activities and exercises for young babies include:

- Tummy time on the floor to strengthen head, neck and trunk muscles
- Placing objects out of reach to encourage babies to practice new movements
- Holding and feeling a variety of objects to develop touch and recognition skills
- Outdoor play to encourage learning in different environments

Children are naturally active; they simply need encouragement, ideas and suggestions for activities. Following are some tips from Nutrition Australia.

ACTIVITY TIPS FOR CHILDREN

Children are naturally active; they simply need encouragement, ideas and suggestions for activities. Following are some tips from Nutrition Australia.

- Some examples of activities that young children may enjoy include:
  - Action games and songs such as ‘The Hokey Pokey’
  - Free play in playgrounds or sandpits
  - Pedalling a bike
  - Riding a scooter

Toddlers and pre-schoolers (1 to 5 years)

A child’s job is to move freely and be active every day! Toddlers and pre-schoolers should be physically active for at least three hours each day, and this activity should be spread throughout the day. Active play helps young children improve the health of their muscles, bones and heart, develop new movement skills, build self-confidence and improve their communication and social skills.

Some examples of activities that young children may enjoy include:

- Action games and songs such as ‘The Hokey Pokey’
- Free play in playgrounds or sandpits
- Pedalling a bike
- Riding a scooter

School aged children (5-12 years)

According to the Department of Health, children aged between 5 to 12 years need at least 60 minutes and up to several hours of moderate to vigorous physical activity every day. Moreover, children should not spend more than two hours a day using electronic media for entertainment (e.g. computer games, TV, internet).

Active play, informal games and organised sports provide good opportunities for children to develop a range of skills including running, throwing, jumping, catching and kicking. Playing sport can help children build their confidence and gives them the opportunity to partake in a wide range of activities as they get older. Children should be encouraged to participate in a variety of activities that are fun and that suit their interests, skills and abilities. Examples include bike riding, football, running and swimming lap.

12-18 years

Teenagers are generally independent when it comes to making decisions about the type and amount of activity they wish to participate in. However, the Department of Health recommends that those between the ages of 12 to 18 years should be encouraged to spend at least 60 minutes engaged in moderate to vigorous physical activities each day.

It is important for teens to limit the amount of time they spend watching TV, surfing the net and playing computer games to no more than two hours each day (unless, of course, it’s for educational purposes).

Moderate activities include brisk walking, bike riding with friends, skateboarding and dancing. Vigorous activities include football, netball, soccer, running, swimming or training for sport. For an additional health benefit, teens should be encouraged to participate in 20 minutes or more...
of vigorous activity on three to four days each week. Participating in a variety of activities allows teens to experience a range of fun activities and challenges and provides the opportunity to learn new skills.

**Tips for choosing the right physical activities for your child**

Physical activity should be a fun and positive experience for children so that they stay motivated and do not become discouraged. It is important to choose activities that complement your child’s ability, though participating in an activity that is slightly more difficult will give your child the opportunity to develop new skills. For example, if your child lacks the coordination skills required to catch a ball, it might be a good idea to encourage them to keep on practising, but in a non-threatening and non-competitive environment.

Activity doesn’t have to be in the form of structured sport, but it is important that children are encouraged to become involved in group activities and be given the opportunity to participate.

In addition to preventing weight problems, involving your child in a sporting team and/or club will help them learn valuable life skills. From team sports, children learn discipline, coordination, communication skills and team work and may develop a passion for their chosen sport that will continue into adult life. Exercise also helps to reduce feelings of stress which are common during adolescence.

Finding the right sport for your child may take a little time, patience and commitment but will be worth it in the long run. To find out about sport opportunities that are available in your area, contact your local library or community centre or check your child’s school for information.

**Family activities**

There are so many non-structured ways to encourage children to be active, and many of these can involve the whole family.

If you’re looking for ways to get active with your family, why not try the following:

➤ Walk to school together
➤ Visit the beach with a cricket bat/ball and Frisbee

➤ Take the dog for a walk
➤ Do some backyard gardening or build a veggie patch
➤ Visit the local swimming pool
➤ Go the park with a footy and play equipment
➤ Ride your bikes to a favourite local picnic spot
➤ Organise a bush walk in the hills or outer city
➤ Find outings that involve walking – visit the zoo or a museum
➤ Do a community walk (e.g. a ‘city to surf’ fun run/walk)
➤ Choose presents for children that encourage activity, for example, kites, outdoor equipment or gift vouchers to outdoor activity parks, canoe hire and roller rinks.

**REFERENCES**


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If you’re over 65 and exercising regularly, give yourself a pat on the back. Being active is one of the best ways to boost your odds of ageing well, by keeping you mentally healthy and free of disease and disability. And it helps even if you start late in life.

But many older exercisers do only one activity and risk missing out on some important health benefits. That’s a key finding of a recent study, published in the *Journal of Science and Medicine in Sport*, which looks at the leisure time physical activity of more than 22,000 older Australians.

The study, which focused specifically on those over 65, shows around two thirds of older people are exercising, with most of them favouring aerobic activity – usually walking.

Just over 45 per cent reported walking, with more than half of these people reporting walking as their sole activity. Only 2.6 per cent of people in the study reported a combination of balance, strength and aerobic (heart and lung fitness) activities.

**WALKING FOR YOUR HEALTH**

Walking is great for conditioning our heart and lungs, but as we get older we need to protect more than just our cardiovascular system, says Associate Professor Dafna Merom, lead author of the study.

“I don’t want to suggest walking is not good; it is excellent exercise,” Merom says.

Walking regularly at a pace brisk enough that you can just hold a conversation cuts your risk of a range of chronic health conditions.

- **30 minutes** (you can even break these down into 10-minute sessions) five days a week, you reduce your risk of heart disease by as much as 40 per cent and your risk of type 2 diabetes.
- **60 minutes a day**, you reduce your risk of heart disease by as much as 50 per cent and help protect against bowel cancer, plus breast cancer if you are a woman or prostate cancer if you are a man.

**SO WHAT ARE OLDER AUSTRALIANS DOING?**

Walking was the most popular activity, reported by 45.6 per cent of the elderly, followed by:

- **Bowls** (9.4 per cent)
- **Aerobics/callisthenics** (9.1 per cent)
- **Golf** (7.7 per cent)
- **Swimming** (6.4 per cent)
- **Gym workouts** (5.2 per cent)
- **Cycling** (3.2 per cent)
- **Tennis** (2.9 per cent)
- **Dancing** (2.1 per cent)
- **Fishing** (2 per cent)
- **Tai chi** (1.4 per cent)
- **Weight lifting** (1.2 per cent)
- **Yoga** (1.1 per cent)

For those who did two activities in the past 12 months, the most common combinations for men were walking with either:

- **Golf** (13 per cent)
- **Lawn bowls** (8.1 per cent)
- **Swimming** (6.8 per cent)
- **Cycling** (5.4 per cent)

The most common combinations for women were walking with:

- **Aerobics/callisthenics** (7.3 per cent)
- **Swimming** (5.5 per cent)
- **Lawn bowls** (3.7 per cent)
- **Golf** (2.7 per cent)
While older people’s participation in more than one activity increased in the period covered by the study, between 2001 and 2009, it seems that as individuals get older, they become less likely to do (or keep doing) multiple activities.

“We don’t know why, but it is important to find it out,” Merom says.

She says there needs to be more research to figure out which single activities older people can do that will help to improve different aspects of fitness at the same time.

Walking is great exercise, but if it’s your only activity, think about another more complex activity, such as dance or tai chi, that will help protect your balance, coordination, concentration and attention.

THE BOTTOM LINE

The bottom line for those over 65 is:

➤➤ If you’re not doing any activity, try to take up at least one. Not being active is a large part of why our health deteriorates after 65.

➤➤ Walking is great exercise, but if it’s your only activity, think about another more complex activity, such as dance or tai chi, that will help protect your balance, coordination, concentration and attention as well as being good for your heart. Engaging your brain at the same time as you exercise seems to be the key. For instance, ‘cyber cycling’ – cycling on a stationary bike while looking at a display of a virtual environment has been shown to better improve cognitive (thinking) performance than simply cycling on a stationary bike.

➤➤ Activities such as yoga (or just stretching exercises) can build flexibility (to help with everyday activities like cleaning and getting dressed), and weight training can build muscle strength (necessary for most everyday activities, even getting in and out of a chair).

➤➤ If you haven’t been active for a while, you might need to start with less than 30 minutes a day and build up from there. (For more information about starting a new exercise regime check out: If you’re new to exercise, do you need to see a doctor before you start? on the ABC Health & Wellbeing website).

WHEN WALKING IS NOT ENOUGH

But walking “may not provide optimal protection for other age-related health conditions such as falls and injuries,” says Merom, from the University of Western Sydney.

Falls are a significant cause of disability – and sometimes death – in older people.

To protect against falls, you need to challenge your sense of balance with activities such as dance and tai chi. Unfortunately, the study found in the previous 12 months only 2.1 per cent of older people danced and only 1.4 per cent did tai chi.

“We only have proof [of a protective effect against falls] for tai chi,” Merom says. “We know, however, that dance has great potential and we are doing the study now. Walking has not yet been shown to have a proven benefit for preventing falls.”

Interestingly, research has shown dance and tai chi may be better than traditional Western exercise or walking for maintaining cognitive function (the thought processes in our brains), Merom says.

Walking also provides little protection against the weakening of bones in post-menopausal women, she says. “Walking is a low impact exercise so it’s not optimal for strengthening bones.”
EXPLORING ISSUES

ABOUT THIS SECTION
‘Exploring issues’ features a range of ready-to-use worksheets relating to the articles and issues raised in this book.

The activities and exercises in these worksheets are suitable for use by students at middle secondary school level and beyond.

As the information in this book is gathered from a number of different sources, readers are prompted to consider the origin of the text and to critically evaluate the questions presented.

Does the source have a particular bias or agenda? Are you being presented with facts or opinions? Do you agree with the writer?

The types of ‘Exploring issues’ questions posed in each Issues in Society title differ according to their relevance to the topic at hand.

‘Exploring issues’ sections in each Issues in Society title may include any combination of the following worksheets: Brainstorm, Research activities, Written activities, Discussion activities, Quotes of note, Ethical dilemmas, Cartoon comments, Pros and cons, Case studies, Design activities, Statistics and spin, and Multiple choice.

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MULTIPLE CHOICE 55-56
EXPLORING

ISSUES  worksheets and activities

BRAINSTORM

Brainstorm, individually or as a group, to find out what you know about physical activity and fitness.

1. What is physical activity, and why is it important?

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2. What is sedentary behaviour, and is it always detrimental to people’s health?

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3. What is screen time, and how does it impact life expectancy?

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4. What is active transport, and how does it affect fitness levels?

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Complete the following activity on a separate sheet of paper if more space is required.

Are you getting enough exercise? Make a list of how many hours, and the types of activities you participated in over the past week, in each of the following categories. Review your completed list and identify whether the time spent in the past week falls within the recommended guidelines for physical activity for your age group. Offer additional ways you can adjust or improve your physical activities to meet the guidelines.

MODERATE PHYSICAL ACTIVITY

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VIGOROUS PHYSICAL ACTIVITY

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PRODUCTIVE SEDENTARY BEHAVIOUR

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NON-PRODUCTIVE SEDENTARY BEHAVIOUR

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Complete the following activity on a separate sheet of paper if more space is required.

A recent study identified that, “walking for exercise was the most popular physical recreational activity, with 24% of the population walking for exercise.”

Is walking the most popular physical recreational activity in your class? In small groups make a list of your ten most popular activities (number from 1 to 10, with 1 being most popular). Compare your list with the other groups to identify the most popular physical recreational activity in your class.
MUTIPLE CHOICE

Complete the following multiple choice questionnaire by circling or matching your preferred responses. The answers are at the end of the next page.

1. How many minutes of moderate-intensity aerobic physical activity per week are recommended for adults 18-64 years old?
   a. 30
   b. 60
   c. 75
   d. 150
   e. 300

2. It has been estimated that for every hour of television you watch over the age of 25, you reduce your life expectancy by how many minutes?
   a. 2
   b. 20
   c. 22
   d. 30
   e. 32
   f. 60

3. What percentage of your maximum heart rate are you exercising at when you are performing 'vigorous aerobic exercise'?
   a. 15-30 per cent
   b. 30-55 per cent
   c. 55-70 per cent
   d. 70-85 per cent
   e. 85-100 per cent

4. What are considered as the 4 S's of fitness? (select all that apply)
   a. Speed
   b. Stamina
   c. Standing
   d. Suppleness
   e. Sitting
   f. Strength
   g. Stress
   h. Self-esteem
   i. Sedentary

5. What do the letters BMI refer to in relation to physical activity and fitness?
   a. Big muscle indicator
   b. Body mass index
   c. Body muscle index
   d. Breathing movement index
   e. Body movement indicator
Complete the following multiple choice questionnaire by circling or matching your preferred responses. The answers are at the end of this page.

6. Match the following terms to their correct definitions:

1. Productive sedentary behaviour
   a. Refers to activity at a level that causes your heart to beat a lot faster and shortness of breath that makes you huff and puff and talking between breaths is difficult.

2. Moderate physical activity
   b. Refers to activity where the muscle contracts, but the muscle length remains the same. This type of muscle contraction is popular with bodybuilders.

3. Insufficient physical activity
   c. Refers to activity such as drawing, solving puzzles or sleeping that requires little energy.

4. Isotonic strength training
   d. Refers to activity at a level that causes your heart to beat faster and some shortness of breath, but that you can still talk comfortably.

5. Aerobic exercise
   e. Refers to activity such as watching television or playing computer games requiring little energy.

6. Isometric strength training
   f. Refers to activity where your muscles shorten as they contract. For example when you flex your bicep muscle or do a sit-up.

7. Isokinetic strength training
   g. Refers to activity where the capacity of your heart and lungs to supply oxygen-rich blood to your muscles increases so they can produce energy for movement over a sustained period.

8. Vigorous physical activity
   h. Refers to activity where your muscle contracts at an even speed, for example when your arm moves evenly through the water when swimming.

9. Non-productive sedentary behaviour
   i. Refers to activity of less than 150 accrued minutes of physical activity in a week.

MULTIPLE CHOICE ANSWERS

1. d 2. c 3. d 4. a, b, d, f 5. b 6. 1 = c, 2 = d, 3 = i, 4 = f, 5 = g, 6 = b, 7 = h, 8 = a, 9 = e.
Fast facts

- Lack of exercise causes an estimated 6% of coronary heart disease cases, 7% of type 2 diabetes cases, and 10% of breast and colon cancers. (pp. 1, 5, 11, 25)
- Worldwide, insufficient physical activity is the fourth leading risk factor for mortality. (pp. 2, 4, 5, 10, 20, 25)
- Participation in regular physical activity reduces the risk of heart disease, diabetes, obesity, and breast and colon cancer. (pp. 2, 15, 22, 38, 40, 42)
- In 2008, globally 31% of adults aged 15 years or older were insufficiently active (men 28% and women 34%). (p.2)
- High-income countries had more than double the prevalence of inactivity compared to low-income countries for both men and women. (pp. 2, 3)
- Adults living in lowest income households were more likely to be sedentary or exercise at low levels than those in highest income households. (pp. 3, 8)
- Women are more likely to walk for exercise, and men are more likely to do moderate or vigorous exercise. (p.4)
- In 2008, nearly two-fifths (38%) of Australians aged 15 years and over were insufficiently physically active. (pp. 5, 25, 44)
- In 2007-08, 72% of Australians were classified as sedentary or having low exercise levels, compared with 69% in 1995 and 2001, and 70% in 2004-05. (pp. 6, 8)
- Over the past 50 years, there has been a huge shift from a lifestyle that was physically active to one that is predominantly sedentary. (p.7)
- Those least likely to be active are women, people with lower socioeconomic status, older adults, people born overseas, people with a disability and Indigenous Australians. (p.7)
- Toddlers and pre-schoolers should be physically active every day for at least 3 hours, throughout the day. (p.8)
- Adults and older people should participate in 30 minutes of moderate intensity physical activity on most, and preferably all, days. (p.8)
- Adults who watch more than 4 hours of television a day, when compared to those who watch less than 2 hours a day, may have up to 46% higher risk of death from all causes, and 80% increased risk for cardiovascular related death. (p.8)
- Of people without a disability, 64% take part in sport or physical activities or attend sporting events as a spectator, compared with 50% of people with a disability and 28% of those with a profound or severe core-activity limitation. (p.10)
- Physical inactivity is responsible for more than 6.6% of the total burden of disease and injury in Australia. (p.10)
- Each year the total economic cost of physical inactivity is estimated to be $13.8 billion. (p.11)
- The most commonly reported barriers to physical activity among physically inactive Australians are a lack of time (40%) and injury or disability (20%). (p.11)
- The number of Australians jogging or running as a sport or recreation has almost doubled since 2005-06. (p.14)
- The two most popular sport or physical recreational activities participated in by Australians are walking and fitness or gym activities. (p.14)
- Young people aged 15-24 years were less likely to be sedentary than those aged 25-64 years. (pp. 16, 17)
- Children who engage in more than 2 hours of non-educational screen time per day are more likely to be overweight; be less physically active; consume more sugary drinks; snack on foods high in sugar, salt and fat; and have fewer social interactions. (p.17)
- The rate of children’s participation in sport and/or dancing was 66% in 2012. The highest participation rate was for those aged 9-11 years (73%). (p.18)
- Between 2003 and 2012, children’s participation in dancing (27%) and martial arts (24%) has increased. (pp. 18, 19)
- Since 2003, swimming and diving has remained the most popular sport for younger Australians. (p.19)
- Children are spending less time watching TV than they did a decade ago, with an average of 15 hours per week spent in front of the box in 2012 compared to 22 hours per week in 2003. (p.19)
- Children and young people aged 5-17 years old should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily. (pp. 20, 24, 47)
- Heart disease is the number one killer of Australian men and women, responsible for nearly 22,000 deaths a year or one death every 24 minutes. (p.25)
- Office-based workers spend an estimated 75% of their day in a chair. (p.26)
- Even in a fast paced world that allows 24-hour access to work and social networks, we still find time to consume 21.5 hours of television (seated) a week. (p.26)
- In 2008, $3.6 billion was estimated to be lost on workplace productivity due to overweight and obesity, while musculoskeletal disorders accounted for 44% of workplace compensation cases and up to 22% of sick leave. (p.26)
- Research suggests that most of us are spending more than half of our day being sedentary. (p.28)
- It’s been estimated that for every hour of television you watch over the age of 25, your life expectancy is reduced by 22 minutes. (pp. 29, 30)
- A large majority of children and adolescents in Australia exceed the recommended maximum of 2 hours a day of screen use for leisure and that time spent in screen activities is increasing. (p.34)
- New research shows that sitting around for long periods of time can increase your blood glucose levels - even if you fit a 30-minute session of exercise in - so stay active and complement your 30 minutes of exercise with regular light activity. (p.36)
- You can estimate your maximum heart rate by subtracting your age in years from 220, e.g. for someone who is 40 their maximum heart rate would be estimated to be around 220 minus 40, which is 180 beats per minute. (pp. 42, 43)
- Around two thirds of people over 65 are exercising, with most of them favouring aerobic activity – usually walking. (p.49)
Physical Activity and Fitness

Active transport
A form of transport other than using a car.

Body mass index
BMI is a measure of a person’s weight in relation to their height, calculated as weight in kilograms divided by height in metres squared.

Cardiovascular fitness
Capacity of the heart and lungs to supply oxygen-rich blood to the working muscles and the capacity of the muscles to use oxygen to produce energy for movement.

Exercise
A sub-set of physical activity. Defined as planned physical activity for recreation, leisure or fitness, with a specific objective such as improving one or more components of physical fitness, performance, health or social interaction.

Health
Defined by the World Health Organization as a state of complete physical, mental and social wellbeing, and not merely as the absence of disease or infirmity.

Health benefits
Small amounts of moderate-intensity activity accumulated over the day can contribute to your health and in turn, provide protection against many diseases such as heart disease and stroke, diabetes, and colorectal and breast cancer, as well as mental health benefits.

Incidental/unplanned physical activity
Includes the forms of physical activity done at work and home, and activity in which people take part as they go about their day-to-day lives, generally using large skeletal muscle groups, for example, using stairs, domestic tasks.

Insufficiently active
Less than 150 accrued minutes of physical activity in the previous week.

Intensity
Self-perceived and self-reported intensity at which an adult person participates in physical activity, e.g. moderate, vigorous.

Leisure-time physical activity
Refers to sport and recreational physical activity, including a range of activities conducted specifically for enjoyment, social, competitive or fitness purposes, performed in leisure or discretionary time.

Moderate-intensity physical activity
Activity that will cause a slight but noticeable increase in your breathing and heart rate. A good example of moderate-intensity physical activity is brisk walking at a pace where you are able to comfortably talk but not sing. Other examples include mowing the lawn, digging in the garden or medium-paced swimming or cycling.

Participation
Involvement in structured and/or unstructured activities that may be classed as community recreation, fitness activities, sport, outdoor recreation, physical education or other forms of physical activity.

Physical activity
Any sustained body movement that uses energy. It is important that people are active every day in as many ways as they can. This may include activity undertaken as part of: recreation, exercise or sporting activities; work; active transport, such as walking or cycling to work; household chores, such as washing, vacuuming, lawn mowing or gardening; everyday life (incidental activity) such as walking up stairs rather than taking the lift or escalators.

Physical fitness
Measure of the body’s ability to function efficiently, effectively and without injury in work and leisure activities, to pursue recreational activities and to cope with emergency situations. Made up of health-related components (such as cardiovascular fitness, flexibility, muscular endurance, and strength) and skill-related components (such as agility, balance, coordination, reactions, rhythm, power, and speed).

Physical inactivity
No reported physical activity in population surveys.

Preventive health
Preventive health directs resources to the promotion of individual and community health, the prevention of ill-health and the reduction of health inequalities.

Recreation activities
Activities that people undertake for enjoyment in their own free time, which are not based on formal competition or organised administration, and which lack of a formal set of rules.

Resistance training
Training where the muscles of the body are trained by applying resistance to a movement. Methods of resistance training include using own body weight, stretch bands, weights, water or immovable objects. It particularly benefits the elderly and those at risk of osteoporosis and musculoskeletal conditions.

Risk factor
An exposure or characteristic that increases the rate of disease relative to those unexposed or without the characteristic.

Sedentary
Habitual lack of physical activity.

Sport
Activities that are competitive, have formal rules, require physical effort and skills, and are organised within institutional structures.

Sufficiently active
Accrual of at least 150 minutes of physical activity during the previous week.

Vigorous-intensity physical activity
Activity that makes you ‘huff and puff’, where talking in full sentences between breaths is difficult. Achieved by playing sports such as football, squash, netball and basketball and activities such as aerobics, circuit training, speed walking, jogging, fast cycling or brisk rowing.
Websites with further information on the topic

Australian Bureau of Statistics  www.abs.gov.au
Australian Institute of Health and Welfare  www.aihw.gov.au
Australian Sports Commission  www.australsport.gov.au
Better Health Channel  www.betterhealth.vic.gov.au
Department of National Parks, Recreation, Sport and Racing, Queensland  www.sportrec.qld.gov.au
Department of Sport and Recreation, Northern Territory  www.sportandrecreation.nt.gov.au
Department of Sport and Recreation, Western Australia  www.dsr.wa.gov.au
Healthy Active Australia  www.healthyactive.gov.au
National Heart Foundation of Australia (Active Living page)  www.heartfoundation.org.au/active-living
Nutrition Australia  www.nutritionaustralia.org
Office of Communities, Sport and Recreation, NSW  www.dsr.nsw.gov.au
Office for Recreation and Sport, South Australia  www.recsport.sa.gov.au
Sport and Recreation, Tasmania  www.development.tas.gov.au/sportrec
Victorian Health Promotion Foundation – VicHealth  www.vichealth.vic.gov.au
World Health Organization (Physical Activity page)  www.who.int/topics/physical_activity/en/

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THANK YOU

* Nutrition Australia
* Australian Bureau of Statistics
* Department of Health and Ageing.

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