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AIHW

Physical activity across the life stages



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Abbreviations

ABS	Australian Bureau of Statistics
AHS	Australian Health Survey
AIHW	Australian Institute of Health and Welfare
ASC	Australian Sports Commission
BOD	burden of disease
CVD	cardiovascular disease
DoH	Department of Health
LGBTQI	lesbian, gay, bisexual, transgender, queer or questioning and intersex
NATSINPAS	National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey
NHS	National Health Survey
NNPAS	National Nutrition and Physical Activity Survey
SES	socioeconomic status
PE	physical education
WHO	World Health Organization

Symbols

%	per cent
n.p.	not publishable because of small unweighted sample size, confidentiality or other concerns about the quality of the data

Summary

Participating in regular physical activity and limiting the amount of time being sedentary can have significant health benefits—it reduces the risk of chronic conditions and other disease risk factors such as overweight and obesity, and also improves social and emotional health and wellbeing. While there are many opportunities to be physically active every day, our social, environmental and cultural context—as well as the settings in which we live, work and play—are important determinants of physical activity participation.

Australia's Physical Activity and Sedentary Behaviour Guidelines (the Guidelines) set out a series of recommendations on the amount of physical activity (both aerobic and strength-based) and sedentary activity that is consistent with optimal health. The Guidelines (outlined in detail in this report) differ by age, with recommendations across the life stages for the age groups birth–5 years, 5–12, 13–17, 18–64, and 65 and over.

This report presents information on Australians' physical and sedentary activity participation rates against the Guidelines. It presents information across different population groups, including by Indigenous status, remoteness, socioeconomic groups and sex, and considers the barriers to physical activity across the life stages.

Few Australians of all ages meeting the physical activity guideline

Overall, 30% of children aged 2–17 and 44% of adults aged 18 and over met the physical activity guideline. Children aged 2–5 were most likely to meet the guideline (61%) while children aged 13–17 were least likely to meet the guideline (7.9%).

Meeting the guideline decreased with increasing age for both children and adults:

- from 61% of 2–5 year olds to 26% of 5–12 year olds to 7.9% of 13–17 year olds
- from 48% of 18–64 year olds to 25% of those aged 65 and over.

Additionally, among adults aged 18–64, fewer than 1 in 4 (24%) met the strength-based activity guideline and less than 1 in 5 (19%) met both the physical and strength-based activity guidelines.

Most children exceed the recommended amount of sedentary screen-based activity, in particular adolescent boys

Only 1 in 4 (25%) children aged 2–5; 1 in 3 (35%) children aged 5–12; and 1 in 5 (20%) children aged 13–17 met the sedentary screen-based behaviour guideline.

Adolescents aged 13–17 were least likely to meet the sedentary screen-based activity guideline. Despite participation in physical activity being similar between adolescent boys and girls, 85% of 13–17 year old boys did not meet this guideline, compared with 74% of adolescent girls.

'Not enough time' and health issues remain a barrier

Almost 4 in 10 adults aged 18–64 (37%) reported *Not enough time* or *Too many other commitments* as the main barriers to participating in sport or recreational physical activities. As age increased, *Poor health or injury* was more frequently cited as the main barrier—increasing from almost one-fifth (18%) of those aged 35–44 to almost half (48%) of adults aged 65 and over.

Participation rates varied across socioeconomic groups, particularly among adults

Among Australian adults, those in the highest socioeconomic group were more likely to meet the physical activity guideline, compared with those in the lowest socioeconomic group:

- 6 in 10 (60%) Australians aged 18–64 in the highest socioeconomic group, compared with only 37% in the lowest socioeconomic group.
- 31% of Australians aged 65 and over in the highest socioeconomic group, compared with 19% in the lowest socioeconomic group.

This pattern was not found in children aged 2–5 and 5–17.

Indigenous children were more active than non-Indigenous children

Indigenous children aged 5–12 and young people aged 13–17 were more likely to meet the physical activity guideline, compared with non-Indigenous children:

- 60% of Indigenous 5–12 year olds, compared with 45% of their non-Indigenous counterparts.
- 33% of Indigenous 13–17 year olds, compared with 19% of their non-Indigenous counterparts.

Among young children aged 2–5, similar proportions of Indigenous (64%) and non-Indigenous (69%) children met the physical activity guideline.

Physical activity participation varied between Indigenous and non-Indigenous adults

Indigenous adults aged 18–64 and Indigenous women aged 65 and over were less likely to meet the physical activity guideline, compared with their non-Indigenous counterparts:

- 38% of Indigenous adults aged 18–64, compared with 46% of non-Indigenous adults of this age.
- non-Indigenous women aged 65 and over (38%) were twice as likely to meet the physical activity guideline, compared with Indigenous women of this age (16%).

However, the proportions were similar for:

- Indigenous men (41%) and non-Indigenous men (44%) aged 65 and over who met the physical activity guideline.
- Indigenous adults (9.4%) and non-Indigenous adults (10%) aged 65 and over who met the strength-based activity guideline.

Adults aged 65 and over spend more leisure time sitting and less in physical activity than younger adults

Adults aged 65 and over are more likely to have reduced working hours or to be retired, leading to increased leisure time for both physical and non-physical activities. As a result, this population group are spending more time sitting at leisure on a usual weekday (6 hours), compared with adults aged 18–64 (4 hours and 29 minutes); and less time on physical activities per day, at 29 minutes for those aged 65 and over compared with 39 minutes for those aged 18 to 64.

Moving forward

The Australian Physical Activity and Sedentary Behaviour Guidelines are set with the intention of maintaining and improving the health of Australians through physical activity participation. Increasing awareness of the Guidelines and emphasising the importance of physical activity to health can improve participation across the life stages. This can be achieved through a multifaceted action plan targeting a diverse range of population groups.

1 Introduction

What is physical activity?

'Physical activity' is any bodily movement produced by skeletal muscles that requires energy expenditure, and should not be confused with 'exercise', which is planned, structured and repetitive physical fitness to achieve a specific aim (WHO 2017a). Examples of 'physical activity' include:

Sporting and leisure activities

- swimming
- tennis
- bushwalking
- going to the gym

Incidental activities

- at work
- for transport
- household chores (Lear et al. 2017; Ross & McGuire 2011).

The 'intensity' of physical activity relates to the magnitude of effort required during performance, and varies across different forms of physical activity (WHO 2017a). 'Moderate-intensity' physical activity requires a reasonable amount of effort that accelerates the heart rate, whereby an individual is able to talk comfortably but not sing (Glasgow et al. 2005; WHO 2017a). In contrast, 'vigorous-intensity' physical activity requires a large amount of effort and substantially raises the heart rate, whereby an individual is unable to talk nor sing (Glasgow et al. 2005; WHO 2017a).

It is important to note that both moderate and vigorous physical activity are included in the physical activity guidelines—not just structured exercise and/or sport.

Physical activity and health

Participating in regular physical activity and limiting the time spent being sedentary can have significant benefits for health. Participation in sufficient levels of physical activity can reduce the risk of many chronic conditions, such as cardiovascular disease (CVD), type 2 diabetes and some forms of cancer. It is also recommended for the management of osteoarthritis and can prevent and manage injuries (Brown et al. 2012; Sims et al. 2006). Additionally, sufficient physical activity levels are an important element in reducing other disease risk factors, such as being overweight or obese; high blood pressure; and high blood cholesterol (Brown et al. 2012; Warburton et al. 2006). Physical activity can also improve social and emotional health through processes including:

- supporting brain development in infants under 1 year (Trawick-Smith 2014)
- reducing anti-social behaviours, and improving concentration and self-esteem in children and teenagers (Kantomaa 2010)
- pain management, improved sleep, reduced stress and anxiety, and increased energy in adults (Brown et al. 2012)
- reducing depression by enhancing quality of life and self-esteem in older adults (Awick et al. 2017).

A recent enhanced analysis by the AIHW indicated that physical inactivity contributed to 2.6% of the total disease burden in 2011 (AIHW 2017a). In particular, physical inactivity contributed 10–20% of the individual disease burden from diabetes, bowel cancer, uterine cancer, dementia, breast cancer, coronary heart disease and stroke (AIHW 2017a). When combined with overweight and obesity (which can be a consequence of physical inactivity), the total disease burden increased to 9.0%, which is equal to the burden from tobacco smoking: the leading risk factor for disease burden in Australia (AIHW 2017a).

Given the health benefits of regular physical activity for disease prevention and management, it is important that Australians of all age groups are supported and encouraged to be more active (as is appropriate for their abilities and limitations). Starting with a small change at both an individual and community level is better than making no change, and can lead to health benefits for Australians of all age groups (WHO 2011). For example, if everyone in the population ‘at risk’ of disease completed an extra 15 minutes of moderate exercise 5 days per week, the proportion of the population expected to be sedentary in 2020 would halve and 13% of the potential future disease burden due to physical inactivity could be avoided (AIHW 2017a).

Strength-based activities and health

Strength-based exercise is any activity that causes the muscles to increase in work capacity, strength, size, power and endurance (National Health Service 2016). Strength activities are those that use an individual’s body weight or a form of resistance in order to strengthen muscles (National Health Service 2016). Examples of strength-based activities include:

- some types of yoga or pilates
- resistance-band training
- high-intensity activities (for example, cycling, dancing, gymnastics or gardening that requires digging or lifting)
- climbing stairs or hills
- squats, push-ups, sit-ups and weight training
- active playgrounds for children (for example, monkey bars, climbing frames, skipping or hopscotch).

While all of these examples are considered strength-based activities, not all were captured or prompted as responses in the data sources used for this report (see Appendix A for more information).

Participating in strength-based activities can reduce premature death by as much as 23% and cancer-related mortality by up to 31% (Stamatakis et al. 2017). Therefore, meeting the strength-based activity guideline is equally as important as completing aerobic exercises. Strength-based physical activity may also reduce associated chronic conditions such as osteoporosis and sarcopenia (loss of muscle mass and strength) in older Australians—conditions which may limit functional capacity and increase the risk of falls (Seguin & Nelson 2003).

Sedentary behaviour, screen-based activities and health

‘Sedentary behaviour’ is defined as prolonged sitting or lying down during the day (excluding time spent sleeping), where low levels of energy are expended (Active Healthy Kids Australia 2014).

There is a difference between being insufficiently active and being sedentary (Department of Health 2017c). Insufficient physical activity refers to not completing enough physical activity (as suggested in the physical activity guidelines), whereas being sedentary refers to long periods of sitting or lying down (Department of Health 2017e). Consequently, it is possible for an individual to meet the physical activity guideline, but also be ‘sedentary’ if large periods are spent sitting or lying down at work or for leisure (Department of Health 2017e).

An increase in time spent on screen-based activities and sedentary behaviour is associated with poor health outcomes such as reduced cardiovascular fitness or function, reduced bone density and increased incidence of overweight or obesity (independent of the level of physical activity) (Martin 2011; Straker et al. 2010; Tremblay et al. 2010). Research has indicated that, while daily exercise is beneficial for health, it is not effective in completely reversing the negative health effects of prolonged sedentary behaviours for the rest of the day (Duvivier et al. 2013). However, breaking up long periods of sitting or inactivity—as well as incorporating moderate levels of physical activity—can promote more healthful effects in individuals with high levels of sedentary behaviour (Duvivier et al. 2013).

This report will particularly focus on screen-based activities when reporting on sedentary behaviours, due to the ever-increasing influence of technology on modern life.

Australia's Physical Activity and Sedentary Behaviour Guidelines

Australia's Physical Activity and Sedentary Behaviour Guidelines (the Guidelines) are a set of recommendations outlining the minimum levels of physical activity required for health benefits, as well as the maximum amount of time one should spend on sedentary behaviours to achieve optimal health outcomes (Department of Health 2017a). The Guidelines were developed following a rigorous evidence review process that considered the relationship between physical activity, sedentary behaviour and health outcome indicators (Department of Health 2017a).

The latest version of the Guidelines (in place since 2014) makes different recommendations for infants aged 0–2; pre-schoolers (aged 3–5); children (aged 5–12); young people (aged 13–17); adults (aged 18–64); and Australians aged 65 and over. This approach acknowledges that different amounts of physical activity are required at various stages of life for maximum health benefits (Table 1.1).

Table 1.1 Summary of Australian Physical Activity and Sedentary Behaviour Guidelines

	Ages 2–5¹	Ages 5–12²	Ages 13–17	Ages 18–64	Ages 65 and over
Physical activity	At least 180 minutes per day	At least 60 minutes per day	At least 60 minutes per day	At least 150 minutes over 5 sessions per week	At least 30 minutes per day
Sedentary or screen-based activity	Should not be restrained for more than 60 minutes at a time ³ No more than 60 minutes of sedentary screen time per day	No more than 120 minutes of screen use Break up long periods of sitting	No more than 120 minutes of screen use Break up long periods of sitting	Minimise and break up prolonged periods of sitting	Be as active as possible
Strength	N/A	Muscle strengthening activities 3 times a week	Muscle strengthening activities 3 times a week	Muscle strengthening activities 2 times a week	Incorporate muscle strengthening activities

¹ This group includes those aged 5 who are not yet in full-time schooling (for example, pre-schoolers).

² This group includes those aged 5 who are in full-time schooling.

³ Examples include being restrained in a stroller, car seat or high chair.

The different components of the Guidelines recognise that a combination of physical activity, strength-based training and limited sedentary behaviour is necessary to achieve benefits to health (Brown et al. 2012).

Because health status is complex and multifaceted, physical activity cannot promote health in isolation from other factors. Rather, multiple lifestyle choices—such as diet and risky behaviours (for example smoking and alcohol consumption)—shape a person's health status in conjunction with physical activity and sedentary behaviours. Therefore, it is unlikely that there is a single best strategy for optimal health and weight maintenance (Boden Institute of Obesity, Nutrition, Exercise and Eating Disorders 2011).

However, integrating the recommendations from the Guidelines and the Australian Dietary Guidelines over time can help achieve positive health gains (NHMRC 2013).

Data sources

The data sources used to report against the Guidelines are:

- the Australian Bureau of Statistics (ABS) 2011–12 National Nutrition and Physical Activity Survey (NNPAS) for reporting on children aged 2–5 and 5–8 and young people aged 13–17. The NNPAS is a component of the 2011–13 Australian Health Survey and is the most recent survey with comprehensive physical activity information for children aged 2–17
- the ABS 2014–15 National Health Survey (NHS) for reporting on adults aged 18–64 and on Australians aged 65 and over
- the ABS 2012–13 National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey (NATSINPAS) for reporting on physical activity participation and the sedentary behaviours of Australia’s Aboriginal and Torres Strait Islander population living in non-remote areas
- the AusPlay Survey conducted by the Australian Sports Commission (ASC) for reporting on the physical recreation participation of Australians across age groups. Data collected through interviews from July 2016 to June 2017 were used for this report.

The ASC survey used a different methodology to the ABS surveys. Therefore, the survey collections should not be compared. The ABS and ASC surveys are weighted to the Australian population and therefore results can be applied to this population group. For more information regarding these surveys, see Appendix A.

Structure of this report

- **Chapter 2** presents the proportion of children aged 2–5 who have met the Guidelines, as well as average time spent doing physical activity and sedentary screen-based activity (for entertainment purposes) and the most common types of sport and activities. The data for this age group are also presented by age, sex, socioeconomic group, remoteness area, and Indigenous status.
- **Chapter 3** presents the proportion of children aged 5–12 and young people aged 13–17 who have met the Guidelines, as well as average time spent doing physical activity and sedentary screen-based activity (for entertainment purposes) and the most common types of sport and activities. The data for these age groups are also presented by age, sex, socioeconomic group, remoteness area, and Indigenous status.
- **Chapter 4** presents the proportion of adults aged 18–64 who have met the Guidelines, as well as the average time spent on sedentary activities and the most common types of sport and activities. The data for this age group are also presented by age, sex, socioeconomic group, remoteness area, and Indigenous status.
- **Chapter 5** presents the proportion of Australians aged 65 and over who have met the Guidelines, as well as the average time spent on sedentary activities and the most common types of sport and activities. The data for this age group are also presented by age, sex, socioeconomic group, remoteness area, and Indigenous status.
- **Chapter 6** provides a discussion of the results.
- **Supplementary tables** are included for all results, graphs and tables presented.

Throughout the report, all reported differences between population groups—such as age group, sex, remoteness, socioeconomic groups and Indigenous status—are statistically significant, unless otherwise stated.

2 Physical activity in children aged 2–5

Participating in regular physical activity from an early age has proven benefits for the physical and mental development of young children. It is associated with better cardiorespiratory and musculoskeletal fitness, motor and cognitive development, psychosocial and emotional regulation and better overall quality of life (Ahn & Fedewa 2011; Tremblay et al. 2017).

Although the Guidelines cover the ages from birth to 5 years, the source data for this section uses the 2011–12 ABS National Nutrition and Physical Activity Survey (NNPAS), which is the latest data source available for this age group and contains physical activity information relating only to children aged 2 and over. Therefore, only results for children aged 2–5 are presented in this chapter.

Children aged 5 are captured by both the guidelines for children from birth to 5 years (covered in this chapter) and by the guidelines for children aged 5 to 12 (covered in Chapter 3). This recognises the fact that some 5 year old children have commenced full-time schooling, while this is not the case for others. School starting ages vary across Australia; however, in 2011, 82% of children who were 5 were in full-time schooling (ABS 2017b).

The 2011–12 NNPAS data does not account for whether individuals in this age group had commenced school, so all 5 year olds are assessed by both measures in this report. The guidelines in this chapter are intended for pre-schoolers, so this will have an impact on findings. Refer to the discussion in Chapter 6 for further information.

In November 2017, the Department of Health released a new set of Guidelines for children from birth to 5 years (Box 2.1). The Guidelines also specify that physical activity for children with a disability or a chronic or acute medical condition is important, but acknowledge that the type and amount should be appropriate to an individual child's ability, and that advice should be sought from health care practitioners (Department of Health 2017a).

Box 2.1: Australian 24-Hour Movement Guidelines for the early years (birth to 5 years)

The 24-hour integrated movement guidelines recognise the importance of achieving a balance of physical activities, quality sedentary activities (for example, non-screen-based activities such as reading and puzzles) and good sleep habits for healthy development in the early years of life. The guidelines also reinforce the relationship between the number of guidelines met and associated health outcomes; that is, health outcomes improved as more recommendations were met (Brown et al. 2012; Okely et al. 2012).

Physical activity

1. Physical activity for infants (birth to 1 year) should be encouraged from birth, particularly through supervised, interactive, floor-based play in safe environments. For those not yet mobile, 30 minutes (1/2 an hour) of tummy time—including reaching and grasping, pushing and pulling, and crawling—spread throughout the day during awake periods, is encouraged.
2. Toddlers aged 1–2 should spend at least 180 minutes (3 hours) per day doing a variety of physical activities including energetic play such as running, jumping and twirling, spread throughout the day—noting that more is better.
3. Pre-schoolers aged 3–5 should spend at least 180 minutes (3 hours) per day doing a variety of physical activities of which 60 minutes (1 hour) is energetic play such as running, jumping, kicking and throwing, spread throughout the day—noting that more is better.

(continued)

Box 2.1 (continued): Australian 24-Hour Movement Guidelines for the early years (birth to 5 years)

Sedentary behaviour

4. Infants (birth to 1 year) should not be restrained for more than 60 minutes (1 hour) at a time (for example, in a stroller, car seat or high chair). Infants should also not spend any time watching television or using other electronic media (DVDs, computer and other electronic games). When infants are sedentary, the caregiver is encouraged to engage with them through activities such as reading, singing, puzzles and storytelling.
5. Toddlers aged 1–2 should not be restrained for more than 60 minutes (1 hour) at a time (for example, in a stroller, car seat or high chair) or sit for extended periods. For toddlers under 2, screen time is not recommended during sedentary periods. For 2 year olds, screen time should be no more than 60 minutes (1 hour) in total throughout the 24-hour period—noting that less is better. When toddlers are sedentary, the caregiver is encouraged to engage with them through activities such as reading, singing, puzzles and storytelling.
6. Pre-schoolers aged 3–5 should not be restrained for more than 60 minutes (1 hour) at a time (for example, in a stroller or car seat) or sit for extended periods. Sedentary screen time should be no more than 60 minutes (1 hour) in total throughout the 24-hour period—noting that less is better. When pre-schoolers are sedentary, caregivers are encouraged to engage with them through activities such as reading, singing, puzzles and storytelling.

For information on the recommended hours of sleep for ages from birth to 5 years, please refer to the Department of Health website.

Source: Department of Health 2017a.

How we are reporting against the Guidelines:

- Outcomes for guidelines 2 and 3 are reported as the proportion of all Australian children aged 2–5 that completed at least 3 hours of physical activity on each of the 7 days prior to interview. For Aboriginal and Torres Strait Islander children and non-Indigenous children, aged 2–5, outcomes for guidelines 2 and 3 are reported as the proportion of children aged 2–5 that completed at least 3 hours of physical activity on each of the 3 days prior to interview. These are referred to as the **physical activity guideline**.
- Outcomes for guidelines 5 and 6 are reported as the proportion of all Australian children aged 2–5 that did no more than 1 hour of sedentary screen-based activity on each of the 7 days prior to interview. For Aboriginal and Torres Strait Islander children and non-Indigenous children aged 2–5, outcomes for guidelines 5 and 6 are reported as the proportion of children aged 2–5 that did no more than 1 hour of sedentary screen-based activity on each of the 3 days prior to interview. These are referred to as the **sedentary screen-based behaviour guideline**.

How many children aged 2–5 are meeting the Guidelines?

Based on the ABS NNPAS, in 2011–12, about 6 in 10 (61%) children aged 2–5 met the physical activity guideline, and one-quarter (25%) met the sedentary screen-based behaviour guideline (Table S2.1).

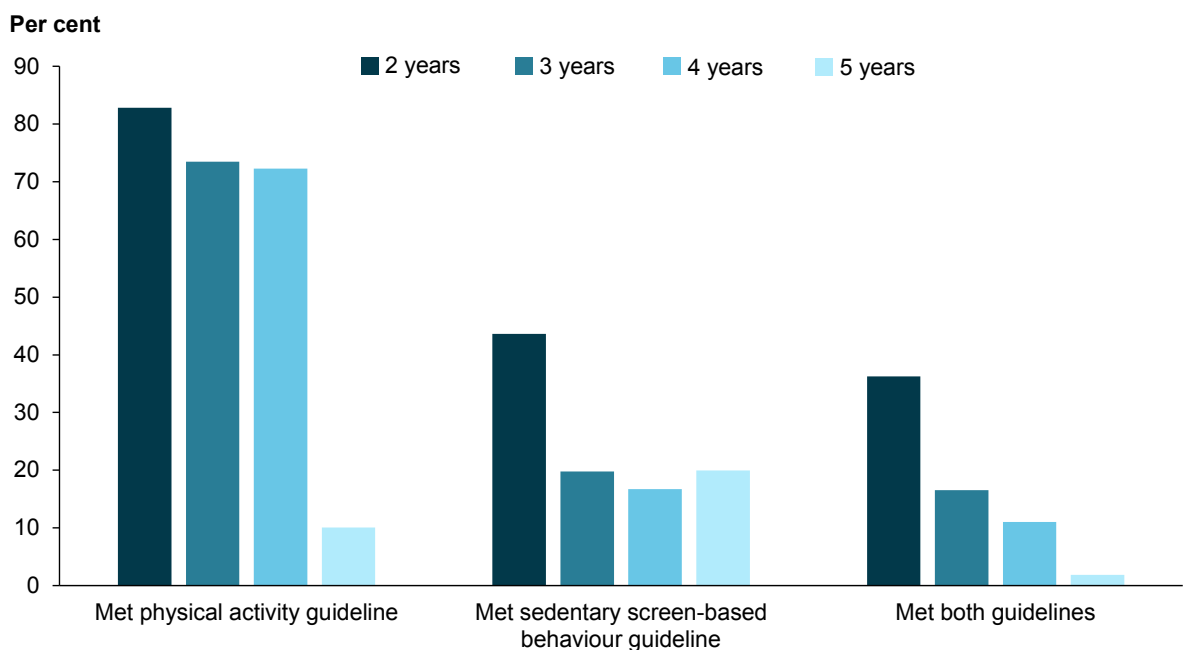
Only 17% of children aged 2–5 met both the physical activity and sedentary screen-based behaviour guidelines on all 7 days.

Age

The proportion of children aged 2–5 who met the physical activity guideline on all 7 days decreased as age increased. Five in 6 (83%) 2 year old children met the physical activity guideline; however, this decreased to just 1 in 10 (10%) children aged 5 (Figure 2.1).

The proportion of children aged 2–5 who met the sedentary screen-based behaviour guideline decreased between the ages of 2 and 5, with 44% of 2 year olds meeting the sedentary screen-based behaviour guideline compared with 20% of 3 year olds, 17% of 4 year olds, and 20% of 5 year olds (Figure 2.1).

Figure 2.1: Proportion of children aged 2–5 who met the physical activity and sedentary screen-based behaviour guidelines, 2011–12



Notes

1. 'Met physical activity guideline' involves completing at least 3 hours of moderate- to vigorous-intensity activity on each of the 7 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 1 hour of screen-based activity on each of the 7 days prior to interview.
3. 'Met both the physical activity and sedentary screen-based behaviour guidelines' involves at least 3 hours of physical activity and less than 1 hour of screen-based activity on each of the 7 days prior to interview.
4. Data refer to the 7 days prior to interview.
5. Data include all 5 year old children from the survey, assessed against the guidelines for toddlers and pre-schoolers aged 2–5.

Source: AIHW analysis of ABS 2013d.

Sex

In 2011–12, about 6 in 10 children aged 2–5 (62% of boys and 59% of girls) met the physical activity guideline, while about one-quarter (25% of boys and 24% of girls) met the sedentary screen-based behaviour guideline. Overall, 17% of boys and 16% of girls met both the physical activity and sedentary screen-based behaviour guidelines.

Population groups

In 2011–12, the proportion of children aged 2–5 who met the physical activity guideline, sedentary behaviour guideline and both guidelines on all 7 days were similar across remoteness areas, but varied across socioeconomic groups.

Remoteness

There was little difference between the proportions who met all guidelines over 7 days, for children aged 2–5 living in *Major cities*, *Inner regional* and *Outer regional/Remote* areas (Table S2.2).

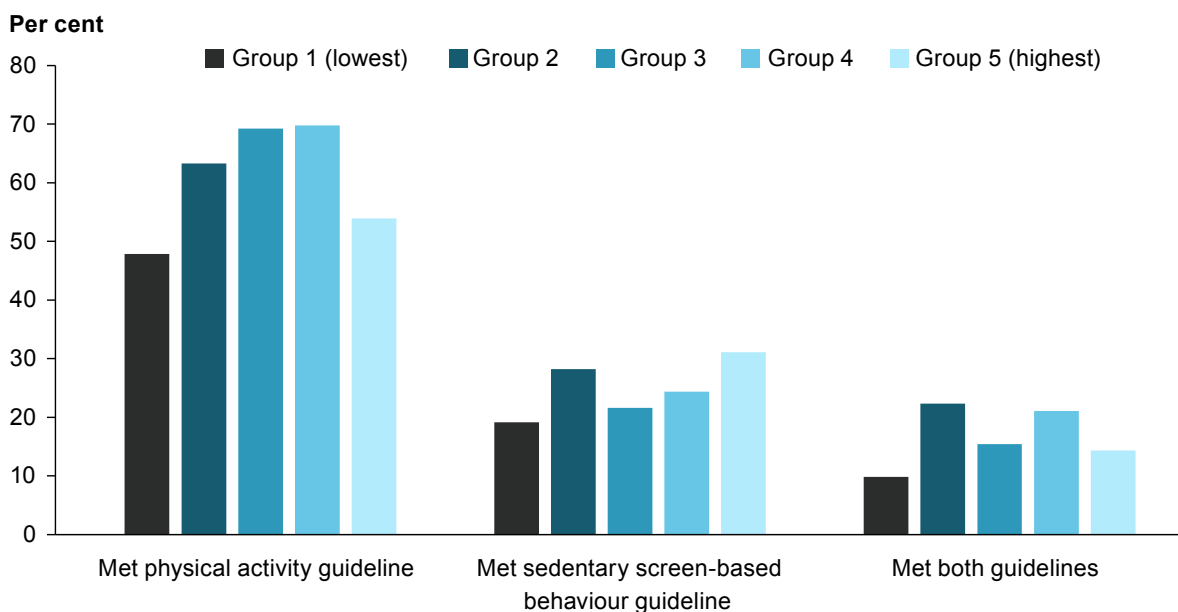
Socioeconomic groups

In 2011–12, the proportion of children aged 2–5 who met the physical activity guideline varied by socioeconomic group, although there was not a clear pattern. Those in the lowest socioeconomic groups were less likely to meet the physical activity guideline, while the proportion of individuals in the middle socioeconomic groups was higher.

The proportions of children aged 2–5 meeting the sedentary screen-based behaviour guideline were similar across socioeconomic groups.

The proportion of 2–5 year olds who met both of the guidelines also varied by socioeconomic group, but there was no clear pattern: the lowest proportion who met both guidelines was found in the lowest socioeconomic group, while 2–5 year olds in the middle socioeconomic groups were more likely to meet these guidelines (Figure 2.2).

Figure 2.2: Proportion of children aged 2–5 who met the physical activity and sedentary screen-based behaviour guidelines, by socioeconomic group, 2011–12



Notes

1. 'Met physical activity guideline' involves completing at least 3 hours of moderate- to vigorous-intensity activity on each of the 7 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 1 hour of screen-based activity on each of the 7 days prior to interview.
3. 'Met both the physical activity and sedentary screen-based behaviour guidelines' involves at least 3 hours of physical activity and less than 1 hour of screen-based activity on each of the 7 days prior to interview.
4. Data refer to the 7 days prior to interview.
5. Data include all 5 year old children from the survey, assessed against the guidelines for toddlers and pre-schoolers aged 2–5.
6. 'Group 1'–'Group 5' refer to area-based fifths, based on the ABS Index of Relative Socio-economic Disadvantage (ABS 2013c).

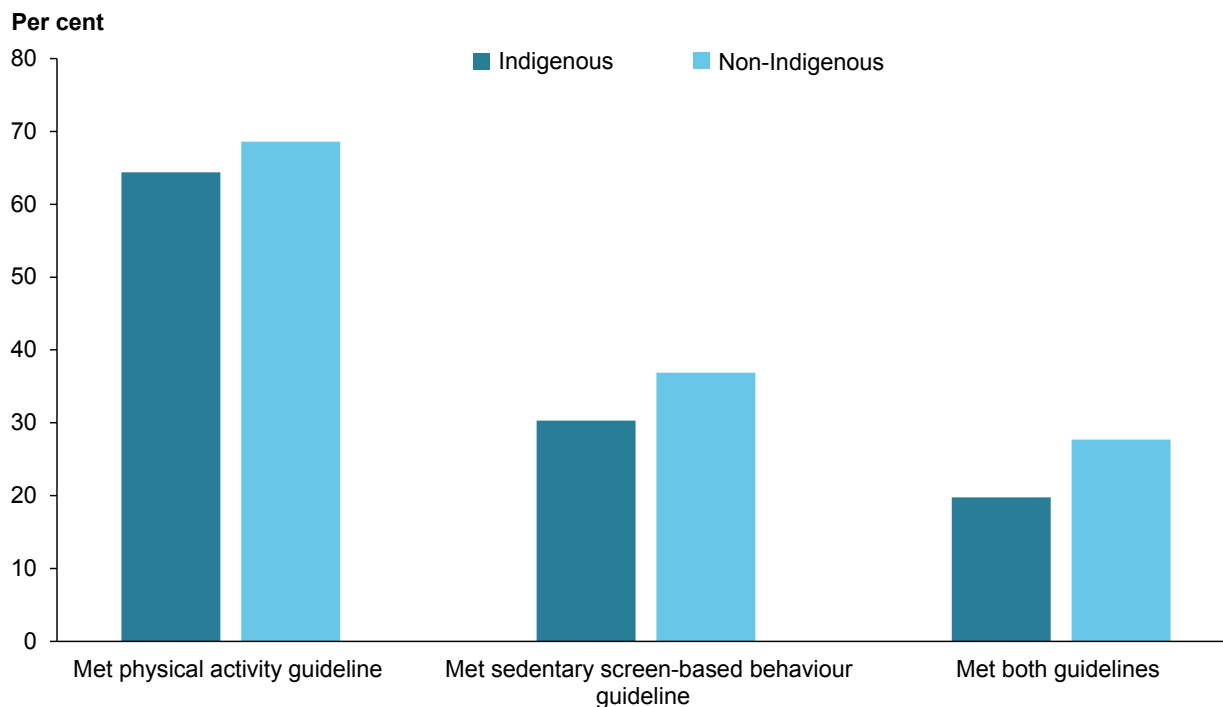
Source: AIHW analysis of ABS 2013d.

Indigenous status

The 2012–13 ABS National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey (NATSINPAS) collected detailed physical activity and sedentary behaviour data on Aboriginal and Torres Strait Islander people living in non-remote areas. The 2012–13 NATSINPAS is directly comparable to the 2011–12 NNPAS, which means that the Indigenous 2–5 year age group can be directly compared with the non-Indigenous 2–5 year age group living in non-remote areas, from the 2011–12 NNPAS.

In 2012–13, over 6 in 10 (64%) Indigenous children aged 2–5 met the physical activity guideline—similar to non-Indigenous children (69%). Three in 10 (30%) Indigenous 2–5 year olds and almost 4 in 10 (37%) non-Indigenous children of the same age met the sedentary screen-based behaviour; any apparent differences were not statistically significant. Overall, there was no significant difference between the proportion of Indigenous children aged 2–5 and non-Indigenous children aged 2–5 meeting both the physical activity and sedentary screen-based behaviour guidelines (20% and 28%, respectively) (Figure 2.3).

Figure 2.3: Proportion of children aged 2–5 who met the physical activity and sedentary screen-based behaviour guidelines on 3 days of the week, by Indigenous status, 2012–13



Notes

1. 'Met physical activity guideline' involves completing at least 3 hours of moderate- to vigorous-intensity activity on each of the 3 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 1 hour of screen-based activity on each of the 3 days prior to interview.
3. 'Met both the physical activity and sedentary screen-based behaviour guidelines' involves at least 3 hours of physical activity and less than 1 hour of screen-based activity on each of the 3 days prior to interview.
4. Data refer to 3 days prior to interview.
5. Data include all 5 year old children from the survey, assessed against the guidelines for toddlers and pre-schoolers aged 2–5.
6. Data are for non-remote areas, which comprise *Major cities*, *Inner regional* and *Outer regional* areas of Australia.
7. Non-Indigenous data are based on the National Nutrition and Physical Activity Survey, 2011–12.

Source: AIHW analysis of ABS 2015a and ABS 2018.

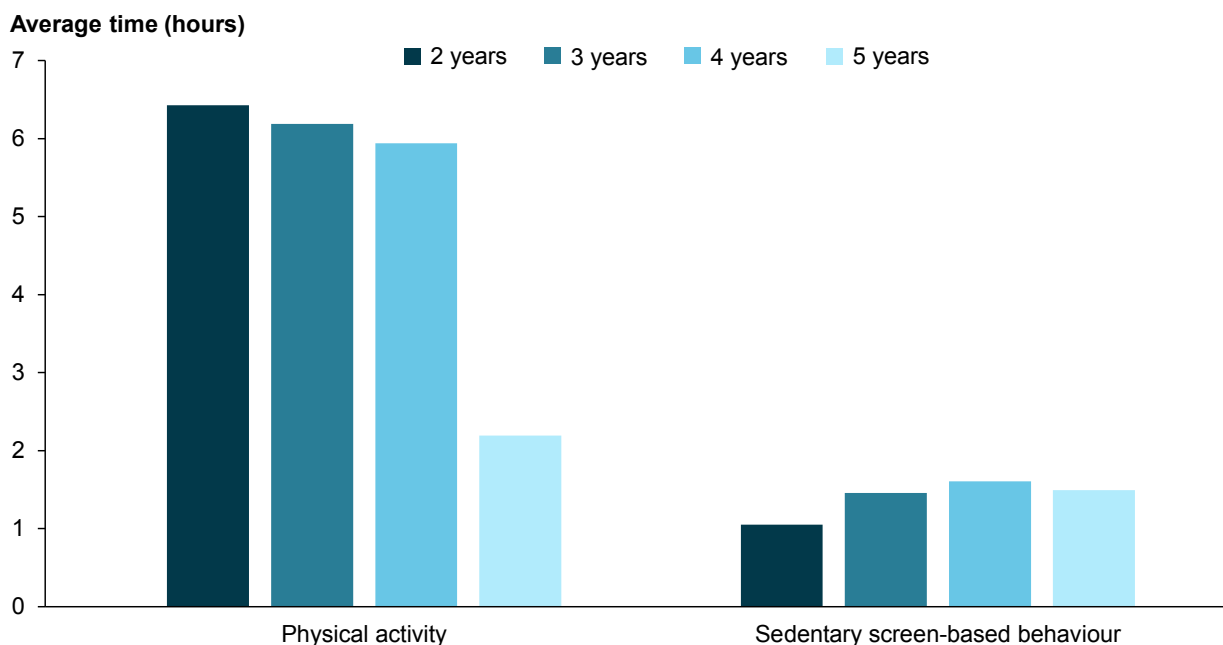
What activities are children aged 2–5 doing?

In 2011–12, children aged 2–5 spent an average of 5 hours and 15 minutes per day on physical activity and 1 hour and 24 minutes on sedentary screen-based activity.

Average time spent on physical activity

The average time per day spent on physical activities decreased as age increased, while the average time per day spent on sedentary screen-based activities increased (Figure 2.4). Children aged 2 spent, on average, 6 hours and 26 minutes doing physical activity; however, this substantially decreased to 2 hours and 12 minutes per day for children aged 5. Conversely, the average time spent being sedentary increased as children got older. Children aged 2 spent an average of 1 hour and 3 minutes per day, while this increased to 1 hour and 30 minutes per day for 5 year olds (Figure 2.4).

Figure 2.4: Average time per day (hours) spent on physical activity and sedentary screen-based activity for children aged 2–5, by age, 2011–12



Notes

1. 'Physical activity' includes time spent on outdoor and indoor physical activity for children aged 2–4, and organised and non-organised physical activity for children aged 5.
2. 'Sedentary screen-based behaviour' includes time spent watching TV, videos or DVD and playing electronic games for children aged 2–4; for children aged 5, 'sedentary screen-based behaviour' includes time spent watching TV, videos or DVD, using the internet (excluding for games or homework) and playing video games.
3. Data are averaged over the 7 days prior to interview.
4. Data include all 5 year old children from the survey, assessed against the guidelines for toddlers and pre-schoolers aged 2–5.

Source: AIHW analysis of ABS 2013d.

The average amount of time spent on physical activity and sedentary screen-based activities each day was similar for boys and girls aged 2–5. Boys spent, on average, 5 hours and 24 minutes on physical activity and 1 hour and 29 minutes on sedentary screen-based activities, while girls spent 5 hours and 6 minutes on physical activity and 1 hour and 20 minutes on sedentary screen-based activity.

Common types of sport and recreational physical activity

Engaging children in organised sporting and non-sporting activities in their early years of life can encourage physical activity. The AusPlay Survey collects information about participation in sport and physical recreation activities, and informs the data in the section that follows (ASC 2017a). See Appendix A for more information on the survey.

In 2016–17, the top 4 sports or physical activities for children aged 2–5 were swimming (41%), recreational dancing (11%), gymnastics (8.2%) and football/soccer (7.2%) (ASC 2017b).

The survey also asked parents about barriers to their children’s participation in organised sport or physical activity outside of school hours. The top 3 response categories on barriers to participation in activities included:

- *Wrong age (too young)* (73%)
- *Already does enough physical activity* (4.6%)
- *Not enough time or too many other commitments* (4.0%).

3 Physical activity among children aged 5–12 and young people aged 13–17

There are many benefits of physical activity for children and young people. Doing regular moderate and/or vigorous physical activity aids in the development of healthy bones, muscles and joints and a healthy cardiovascular system. It is also an important element to achieving and maintaining a healthy weight. Therefore, physical activity should be an important health promotion focus (AIHW 2016b).

Physical activity is also associated with psychological benefits in young people and is shown to improve symptoms of anxiety and depression (WHO 2011). It encourages social interaction, which in turn, helps to build confidence. Young people who are physically active are also more likely to adopt other healthy behaviours—such as avoidance of smoking, drugs and alcohol—as well as performing better academically (WHO 2011).

As discussed in Chapter 2, children aged 5 are captured by both the birth–5 years guidelines and the 5 to 12 years guidelines. The guidelines differ in the recommended minimum amount and types of physical activity (3 hours for 2–5 year olds and 1 hour for 5–12 year olds). Since the majority of 5 year olds are in full-time schooling, the guidelines presented in this chapter are considered to be more appropriate, in most instances. However, it is not possible to determine from the 2011–12 NNPAS which children are in full-time schooling. Refer to Box 3.1 for the Physical Activity and Sedentary Behaviour Guidelines for individuals aged 5–17.

Box 3.1: Physical Activity and Sedentary Behaviour Guidelines for children (5–12 years) and young people (13–17 years)

Physical activity

1. Children aged 5–12 and young people aged 13–17 should accumulate at least 60 minutes (1 hour) of moderate- to vigorous-intensity physical activity every day.
2. Children and young people's physical activity should include a variety of aerobic activities, including some vigorous-intensity activity.
3. On at least 3 days per week, children and young people should engage in activities that strengthen muscle and bone.
4. To achieve additional health benefits, children and young people should engage in more activity—up to several hours per day.

Sedentary behaviour

5. Limit use of electronic media for entertainment (for example, television, seated electronic games and computer use) to no more than 120 minutes (2 hours) per day – lower levels are associated with reduced health risks.
6. Break up long periods of sitting as often as possible.

Source: Department of Health 2017a.

(continued)



Box 3.1 (continued): Physical Activity and Sedentary Behaviour Guidelines for children (5–12 years) and young people (13–17 years)

How we are reporting against the Guidelines:

- The outcome for guideline 1 is reported as the proportion of all Australian children aged 5–12 and 13–17 who did at least 1 hour of moderate- to vigorous-intensity physical activity on each of the 7 days prior to interview. For Aboriginal and Torres Strait Islander children and non-Indigenous children aged 5–12 and 13–17, the outcome for guideline 1 is reported as the proportion of children of these ages who completed at least 1 hour of physical activity on each of the 3 days prior to interview. This is referred to as the **physical activity guideline**.
- The outcome for guideline 3 is reported as the proportion of all Australian children aged 15–17 who did strength or toning activities on at least 3 days in the 7 days prior to interview. This is referred to as the **strength-based activity guideline**.
- The outcome for guideline 5 is reported as the proportion of children aged 5–12 and 13–17 who did no more than 2 hours of sedentary screen-based activity on each of the 7 days prior to interview. For Aboriginal and Torres Strait Islander children and non-Indigenous children aged 5–12 and 13–17, the outcome for guideline 5 is reported as the proportion of children aged 5–12 and 13–17 who did no more than 2 hours of sedentary screen-based activity on each of the 3 days prior to the interview. This is referred to as the **sedentary screen-based behaviour guideline**.

The 2011–12 NNPAS was used to report on the physical activity and sedentary screen-based behaviour guidelines. While the Guidelines recommend that children aged 5 and over participate in strength-based activities, these data are only available for those aged 15 and over from the 2014–15 ABS National Health Survey (NHS). Therefore, strength-based activity results are only presented for young people aged 15–17 in this chapter.

How many children aged 5–12 and young people aged 13–17 are meeting the Guidelines?

In 2011–12, around:

- 1 in 4 (26%) children aged 5–12 and around 1 in 10 (8%) children aged 13–17 met the physical activity guideline
- 1 in 3 (35%) children aged 5–12 and 1 in 5 (20%) children aged 13–17 met the sedentary screen-based behaviour guideline
- 1 in 10 (12%) children aged 5–12 and only 1.9% of young people aged 13–17 met both the physical activity and sedentary screen-based behaviour guidelines (Table S3.1).

In 2014–15, around two-thirds (63%) of 15–17 year olds completed no strength-based activities, with only 1.5% undertaking the recommended amount of both physical and strength-based activity.

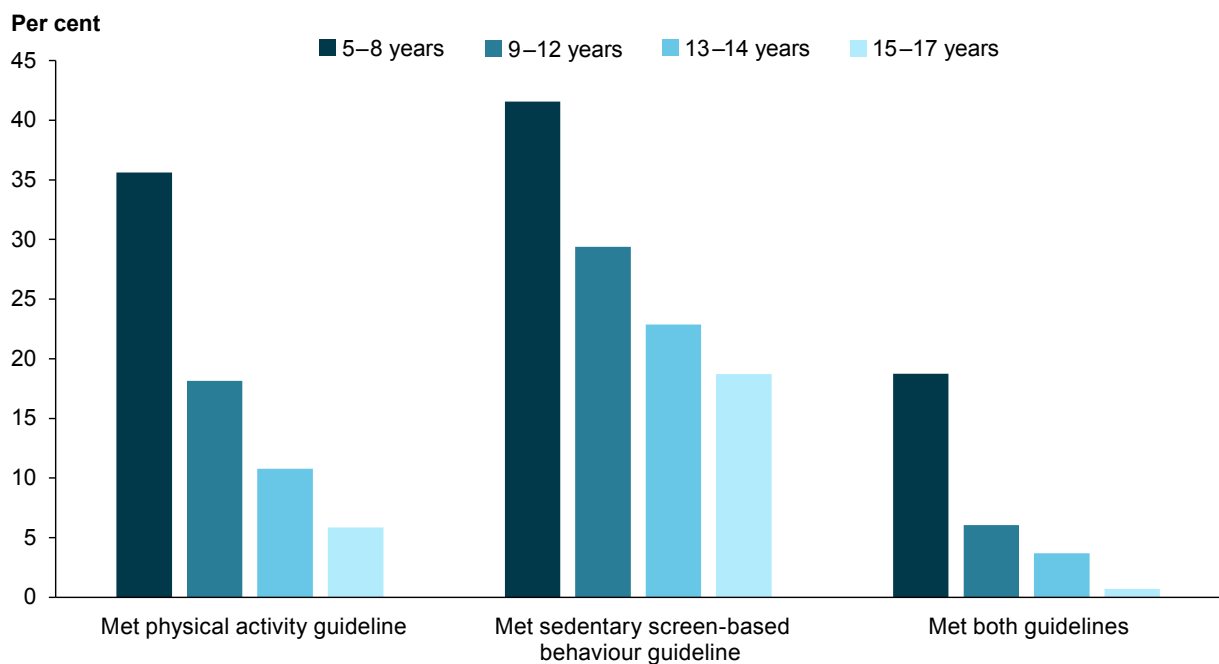


Age

The proportion of children aged 5–17 meeting the physical activity guideline decreased with increasing age. Similarly, the proportion of children and young people who met the sedentary screen-based behaviour guideline decreased with age—from 42% among children aged 5–8 to 19% of young people aged 15–17 (Figure 3.1).

The proportion of children and young people meeting both the physical activity and sedentary screen-based behaviour guidelines steadily decreased with increasing age—from 19% of children aged 5–8, to 6.1% of children aged 9–12, to 3.7% of young people aged 13–14, to 0.7% of young people aged 15–17 (Figure 3.1).

Figure 3.1: Proportion of children aged 5–17 who met the physical activity and sedentary screen-based behaviour guidelines, by age group, 2011–12



Notes

1. 'Met physical activity guideline' involves completing at least 1 hour of moderate- to vigorous-intensity activity on each of the 7 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 2 hours of screen-based activity on each of the 7 days prior to interview.
3. 'Met both the physical activity and sedentary screen-based behaviour guidelines' involves at least 1 hour of physical activity and less than 2 hours of screen-based activity on each of the 7 days prior to interview.
4. Data refer to the 7 days prior to interview.
5. Data include all 5 year old children from the survey, assessed against the guidelines for school-aged children and young people aged 5–17.

Source: AIHW analysis of ABS 2013d.

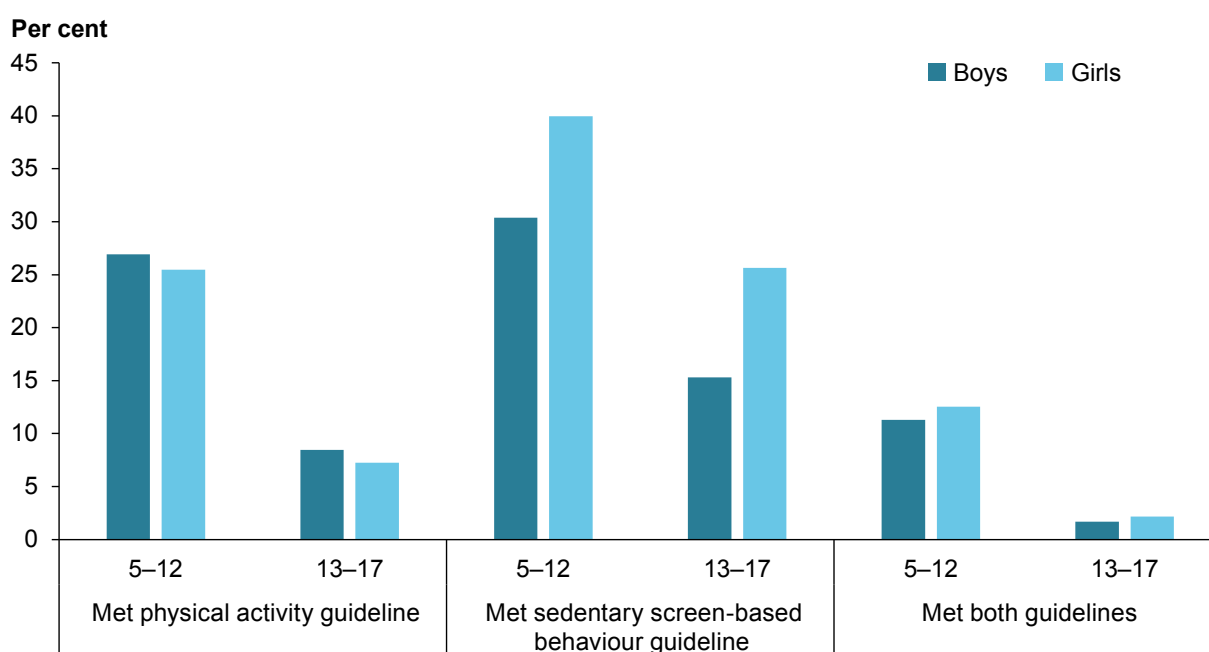


Sex

In 2011–12, around one-quarter of both boys (27%) and girls (25%) aged 5–12 met the physical activity guideline. The proportion of boys aged 5–12 who met the sedentary screen-based behaviour guideline was lower than the proportion of girls the same age (30% compared with 40%). Overall, similar proportions of boys and girls aged 5–12 met both guidelines (13% and 11% respectively) (Figure 3.2).

The proportions of boys and girls aged 13–17 who met the physical activity guideline were similar (8.4% and 7.2% respectively); however, a lower proportion (15%) of boys aged 13–17 met the sedentary screen-based behaviour guideline, compared with 26% of girls of the same age (Figure 3.2).

Figure 3.2: Proportion of children aged 5–17 who met the physical activity and sedentary screen-based behaviour guidelines, by age group and sex, 2011–12



Notes

1. 'Met physical activity guideline' involves completing at least 1 hour of moderate- to vigorous-intensity activity on each of the 7 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 2 hours of screen-based activity on each of the 7 days prior to interview.
3. 'Met both the physical activity and sedentary screen-based behaviour guidelines' involves at least 1 hour of physical activity and less than 2 hours of screen-based activity on each of the 7 days prior to interview.
4. Data refer to the 7 days prior to interview.
5. Data include all 5 year old children from the survey, assessed against the guidelines for school-aged children and young people aged 5–17.

Source: AIHW analysis of ABS 2013d.

A greater proportion of boys aged 15–17 (19%) completed strength-based activities on at least 3 days per week, compared with girls aged 15–17 (7.3%) (Table S3.1).



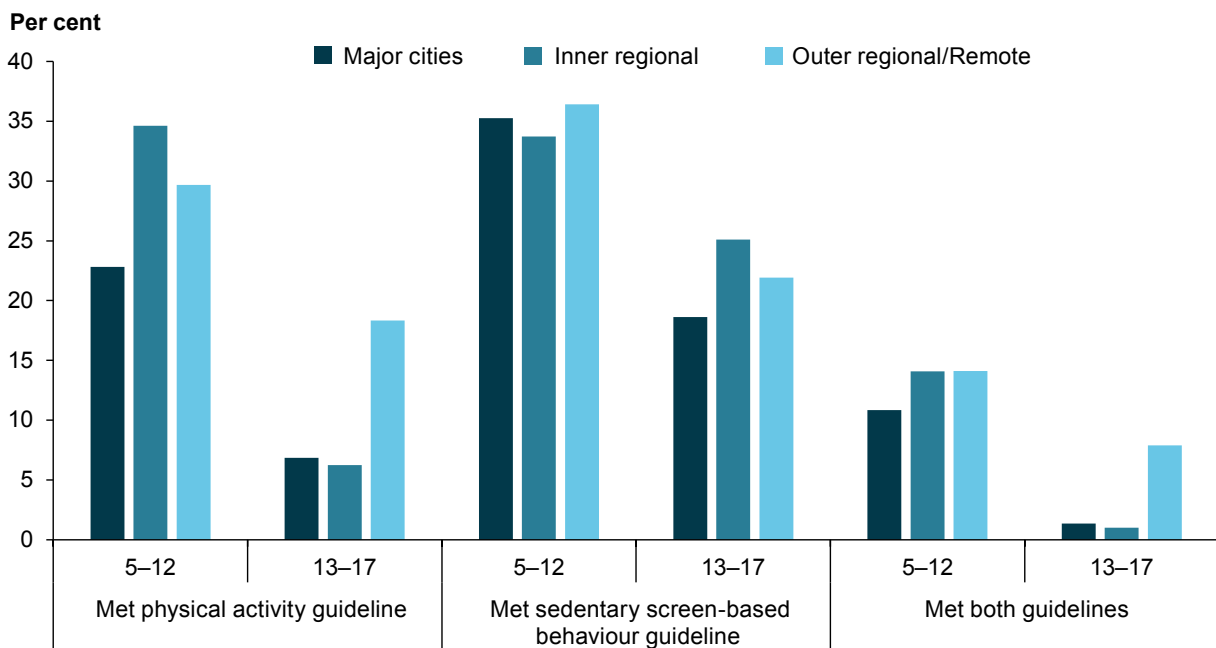
Population groups

Remoteness

In 2011–12, the proportion of children aged 5–12 who met the physical activity guideline was lowest in *Major cities* (23%) and the highest proportion was among those living in *Inner regional* areas (35%).

Young people aged 13–17 living in *Outer regional/Remote* areas were more active, with 18% meeting the physical activity guideline, compared with 6.8% of those living in *Major cities* and 6.2% of those in *Inner regional* areas (Figure 3.3).

Figure 3.3: Proportion of children aged 5–17 who met the physical activity and sedentary screen-based behaviour guidelines, by remoteness area and age group, 2011–12



Notes

1. 'Met physical activity guideline' involves completing at least 1 hour of moderate- to vigorous-intensity activity on each of the 7 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 2 hours of screen-based activity on each of the 7 days prior to interview.
3. 'Met both the physical activity and sedentary screen-based behaviour guidelines' involves at least 1 hour of physical activity and less than 2 hours of screen-based activity on each of the 7 days prior to interview.
4. Data refer to the 7 days prior to interview.
5. Data include all 5 year old children from the survey, assessed against the guidelines for school-aged children and young people aged 5–17.

Source: AIHW analysis of ABS 2013d.

Socioeconomic groups

The proportion of children aged 5–12 who met the physical activity guideline varied across socioeconomic groups, from 23% in groups 2 and 3 (with group 1 being the lowest socioeconomic group) to 31% in group 4. The proportion of children aged 5–12 who met both the physical activity and sedentary screen-based behaviour guidelines on all 7 days ranged from 5.9% in the lowest socioeconomic group to 15% in the second lowest socioeconomic group (Table S3.2).

Among young people aged 13–17, there was little difference, by socioeconomic group, in the proportion meeting the sedentary screen-based behaviour guideline (Table S3.3). Due to the small sample size, the proportion of young people aged 13–17 who met both the guidelines is not reportable.

Indigenous status

The results reported in this section are for Indigenous and non-Indigenous children from non-remote areas. The 2012–13 NATSINPAS did not collect data on strength-based activities for children and young people aged 5–17.

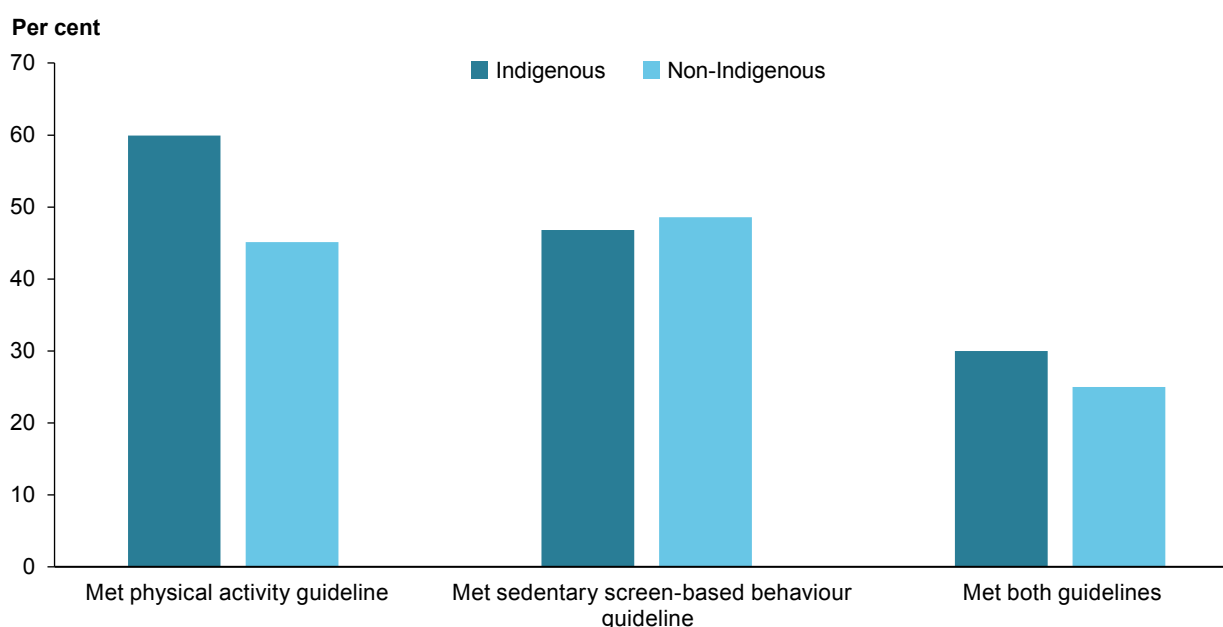
Indigenous children aged 5–12

In 2012–13, 6 in 10 (60%) Indigenous children aged 5–12 living in non-remote areas met the physical activity guideline, compared with 45% of non-Indigenous children.

The proportion of children meeting the sedentary screen-based behaviour guideline was similar between Indigenous (47%) and non-Indigenous (49%) children.

Overall, 3 in 10 (30%) Indigenous children aged 5–12 met both guidelines—a similar proportion to non-Indigenous children of the same age (25%) (Figure 3.4).

Figure 3.4: Proportion of children aged 5–12 living in non-remote areas who met the physical activity and sedentary screen-based behaviour guidelines on 3 days of the week, by Indigenous status, 2012–13



Notes

1. 'Met physical activity guideline' involves completing at least 1 hour of moderate- to vigorous-intensity activity on each of the 3 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 2 hours of screen-based activity on each of the 3 days prior to interview.
3. 'Met both the physical activity and sedentary screen-based behaviour guidelines' involves at least 1 hour of physical activity and less than 2 hours of screen-based activity on each of the 3 days prior to interview.
4. Data refer to 3 days prior to interview.
5. Data are for non-remote areas, which comprise *Major cities, Inner regional* and *Outer regional* areas of Australia.
6. Data include all 5 year old children from the survey, assessed against the guidelines for school-aged children and young people aged 5–17.
7. Non-Indigenous data are based on the National Nutrition and Physical Activity Survey, 2011–12.

Source: AIHW analysis of ABS 2015a and ABS 2018.



More Indigenous boys aged 5–12 (66%) met the physical activity guideline, compared with non-Indigenous boys of the same age (45%). The proportion of boys aged 5–12 who met the sedentary screen-based behaviour guideline was similar among Indigenous and non-Indigenous boys, at 46% and 42%, respectively. Overall, more Indigenous boys aged 5–12 (35%) met both guidelines, compared with non-Indigenous boys (23%).

The proportions of Indigenous and non-Indigenous girls aged 5–12 who met the physical activity guideline, the sedentary screen-based behaviour guideline and both guidelines were similar (Table S3.2).

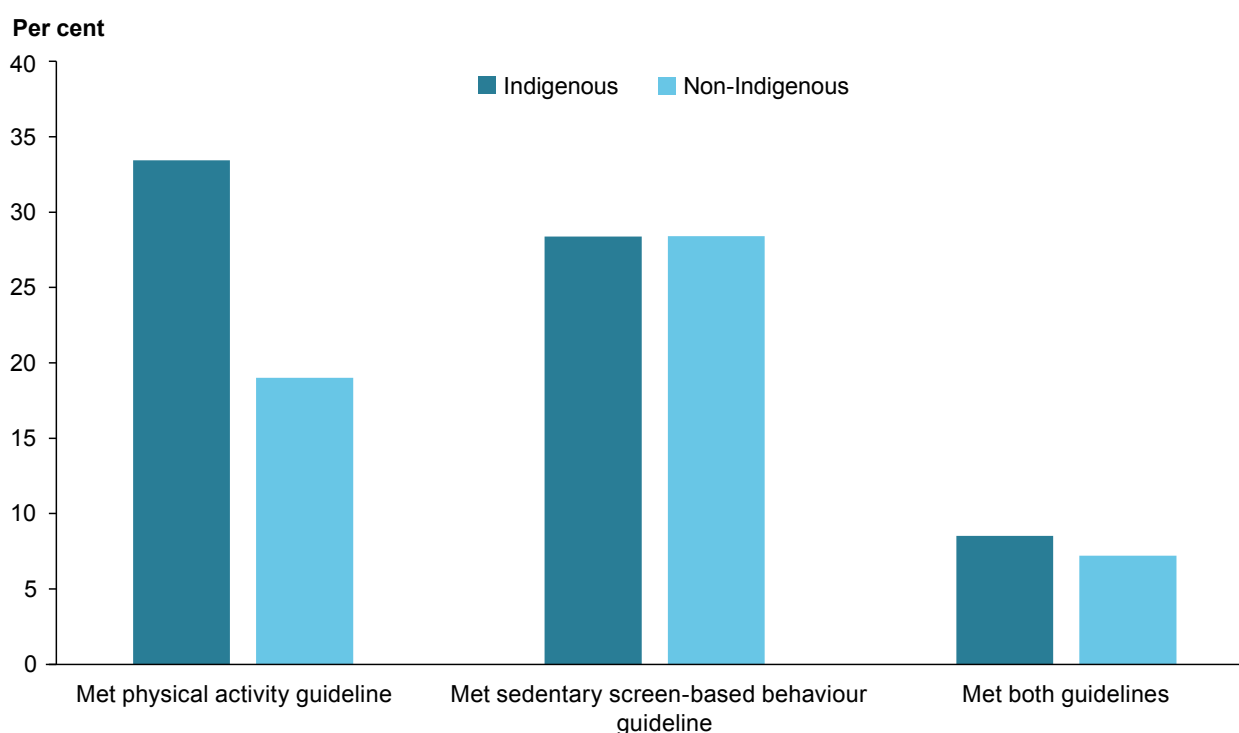
Indigenous young people aged 13–17

The proportion of Indigenous young people aged 13–17 who met the physical activity guideline (33%) was considerably greater than non-Indigenous children of the same age (19%).

The proportion who met the sedentary screen-based behaviour guideline was the same in Indigenous and non-Indigenous young people (28%).

Overall, around 1 in 10 (8.5%) Indigenous young people aged 13–17 living in non-remote areas met both guidelines. The proportion was similar among non-Indigenous young people, at 7.2% (Figure 3.5).

Figure 3.5: Proportion of children aged 13–17 living in non-remote areas who met the physical activity and sedentary screen-based behaviour guidelines on 3 days of the week, by Indigenous status, 2012–13



Notes

1. 'Met physical activity guideline' involves completing at least 1 hour of moderate- to vigorous-intensity activity on each of the 3 days prior to interview.
2. 'Met sedentary screen-based behaviour guideline' involves completing less than 2 hours of screen-based activity on each of the 3 days prior to interview.
3. Young people met both physical activity and sedentary screen-based behaviour guidelines if they did at least 1 hour of physical activity and less than 2 hours of screen-based activity on each of the 3 days prior to interview.
4. Data refer to 3 days prior to interview.
5. Data are for non-remote areas, which comprise *Major cities, Inner regional and Outer regional* areas of Australia.
6. Non-Indigenous data are based on the National Nutrition and Physical Activity Survey, 2011–12.

Sources: AIHW analysis of ABS 2015a and ABS 2018.

What activities are children aged 5–12 and young people aged 13–17 doing?

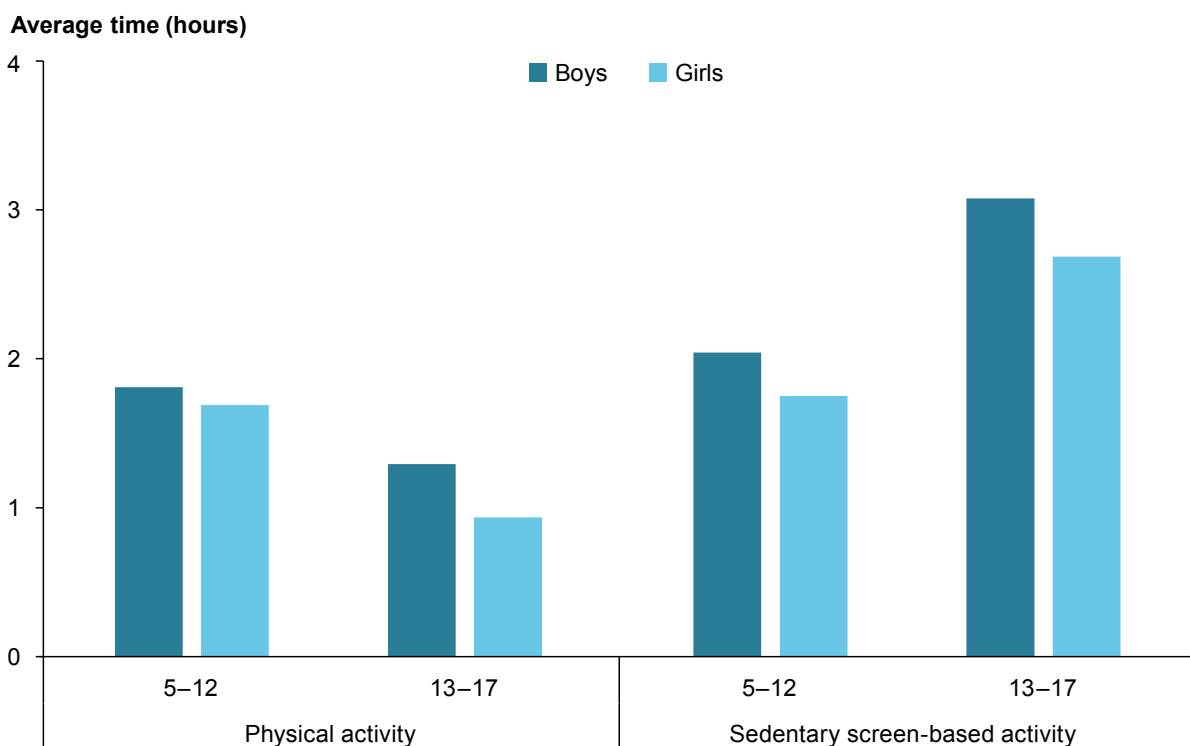
Average time spent on physical activity

In 2011–12, children aged 5–12 spent, on average, 1 hour and 45 minutes per day on physical activity and 1 hour and 54 minutes per day on sedentary screen-based activity. Compared with children aged 5–12, young people aged 13–17 spent around 40 minutes less per day on physical activity (1 hour and 7 minutes) and 1 hour more on sedentary screen-based activities (2 hours and 53 minutes).

Boys and girls aged 5–12 spent similar amounts of time on physical activity—an average of 1 hour and 49 minutes per day for boys and 1 hour and 41 minutes for girls. Compared with boys aged 5–12, girls of the same age spent an average of 17 minutes less per day on sedentary screen-based activities (1 hour and 45 minutes compared with 2 hours and 2 minutes) (Figure 3.6).

Adolescent boys aged 13–17 spent an average of 1 hour and 18 minutes per day on physical activity—22 minutes more per day than adolescent girls (56 minutes per day). Similar to children aged 5–12, adolescent girls aged 13–17 spent less time per day on sedentary screen-based activities (2 hours and 41 minutes), compared with boys (3 hours and 5 minutes) (Figure 3.6 and Table S3.4).

Figure 3.6: Average time per day (hours) spent on physical activity and sedentary screen-based activity for children aged 5–12 and young people aged 13–17, by age group and sex, 2011–12



Notes

1. Physical activity includes time spent on both organised and non-organised physical activity for children aged 5–17 years.
2. Sedentary screen-based activity includes time spent watching TV, videos or DVD, using the internet (excluding for games or homework) and playing video games.
3. Data are averaged over the 7 days prior to interview.

Source: AIHW analysis of ABS 2013d.



Common types of sport and recreational physical activity

The data used in this section are based on information from the AusPlay Survey (ASC 2017b).

Engaging in regular sporting activities can encourage a healthy social life and build confidence in children and young people (Eime et al. 2013).

In the AusPlay Survey, participation in physical activity for children aged 5–14 is reported by parents and includes organised, out-of-school sports or physical activities. In comparison, participation in physical activity for children aged 15–17 is self-reported, and includes both organised and non-organised sports or physical activities. To account for these different data-collection methods, the data presented here are for the age groups 5–12, 13–14 and 15–17.

In 2016–17, the 5 most common sports or physical activities for children aged 5–12 were swimming (37%), football/soccer (20%), Australian football (13%), gymnastics (9.9%) and recreational dancing (9.4%).

For children of this age group, the 3 most common responses on barriers to participation in organised sports or physical activities were:

- *Wrong age (too young)* (17%)
- *Not enough time or too many commitments* (9.8%)
- *Can't afford it/can't afford transport* (8.3%).

For young people aged 13–14, in 2016–17, the 3 most common sports or physical activities were football/soccer (19%), netball (16%) and basketball (14%). Swimming (12%), Australian football (12%) and tennis (7.7%) were also among the most popular sports that young people of this age took part in. The 3 most common responses on barriers to participation were:

- *Don't like physical activity or not interested in sport* (29%)
- *Not a priority* (22%)
- *Not enough time or too many commitments* (10%).

In 2016–17, the 3 most common sports or physical activities for young people aged 15–17 were football/soccer (23%), fitness/gym (22%) and athletics, track and field (including jogging) (21%). Also among the most popular sports were basketball (16%), swimming (14%) and netball (13%). The 3 most common responses on barriers to participation included:

- *Don't like physical activity or not interested in sport* (30%)
- *Not enough time or too many commitments* (24%)
- *Too lazy* (12%).



4 Physical activity among adults aged 18–64

For adults, doing even a small amount of physical activity is better than none, due to the positive benefits associated with physical activity and the reduction in the risk of disease burden (AIHW 2017a; WHO 2017b). Incidental activities, such as active commuting to work (for example, walking or cycling), are also associated with similar health-risk reductions (Brown et al. 2012; Sims et al. 2006). Refer to Box 4.1 for the Physical Activity and Sedentary Behaviour Guidelines for Adults aged 18–64.

Box 4.1: Physical Activity and Sedentary Behaviour Guidelines for adults (18–64 years)

Physical Activity

1. Doing any physical activity is better than doing none. If you currently do no physical activity, start by doing some, and gradually build up to the recommended amount.
2. Accumulate 150 to 300 minutes (2 hours and 30 minutes to 5 hours) of moderate-intensity physical activity or 75 to 150 minutes (1 hour and 15 minutes to 2 hours and 30 minutes) of vigorous-intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week.
3. Be active on most, preferably all, days every week.
4. Do muscle-strengthening activities on at least 2 days each week.

Sedentary Behaviour

5. Minimise the amount of time spent in prolonged sitting.
6. Break up long period of sitting as often as possible.

Source: Department of Health 2017a.

How we are reporting against the Guidelines:

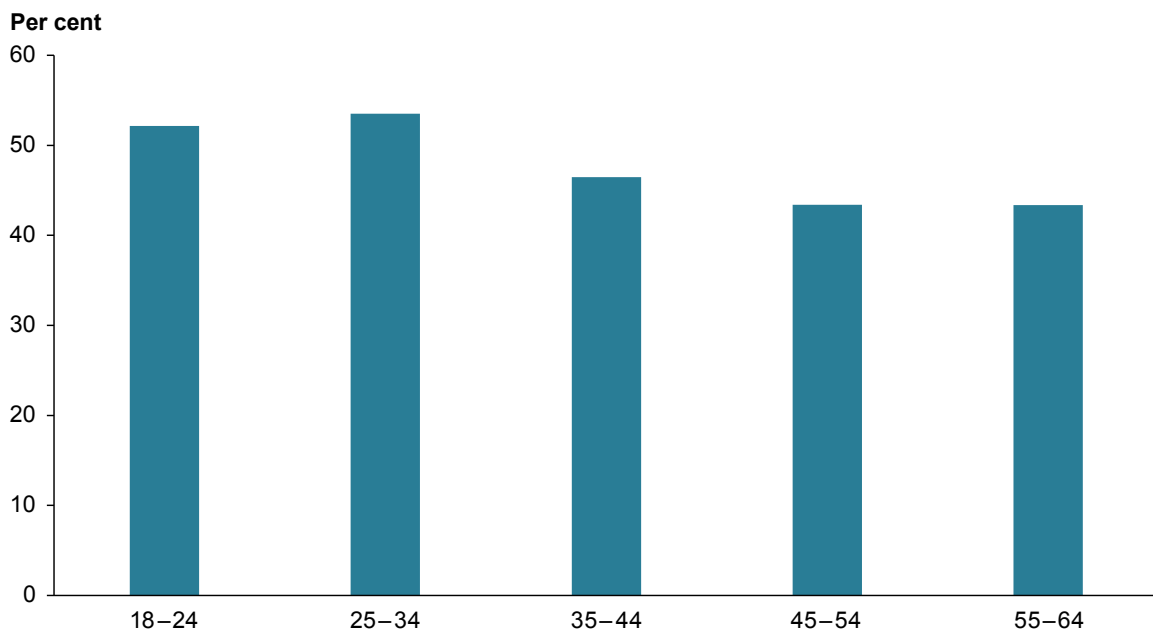
- Outcome for guideline 2 is reported as the proportion of adults aged 18–64 who completed at least 150 minutes of moderate- or vigorous-intensity physical activity over 5 sessions in the 7 days prior to interview. This is referred to as the **physical activity guideline**. Adults meeting this guideline were referred to as 'sufficiently active', while adults who did not meet this guideline were considered either 'inactive' (did no physical activity) or 'insufficiently active' (did some physical activity, but did not meet the guideline).
- Outcome for guideline 4 is reported as the proportion of adults aged 18–64 who completed at least 2 days of strength or toning activities in the 7 days prior to interview. For Aboriginal and Torres Strait Islander adults and non-Indigenous adults aged 18–64, the outcome for guideline 4 is reported as the proportion of adults who did 2 sessions (instead of days) of strength-based activity in the 7 days prior to interview. This is referred to as the **strength-based activity guideline**.
- Outcomes for guidelines 2 and 4 are combined and reported as the proportion of adults aged 18–64 who completed at least 150 minutes of physical activity over 5 or more sessions *and* did at least 2 days of strength or toning activities in the 7 days prior to interview. For Aboriginal and Torres Strait Islander and non-Indigenous adults aged 18–64, this is reported as the proportion who completed at least 150 minutes of physical activity over 5 or more sessions and did at least 2 sessions (instead of days) of strength or toning activities in the 7 days prior to interview. This is referred to as meeting both the **physical and strength-based activity guidelines**.

How many adults aged 18–64 are meeting the Guidelines?

Physical activity

In 2014–15, around half (48%) of adults aged 18–64 met the physical activity guideline and were considered to be sufficiently active (Box 4.1). In general, as age increased, the proportion of people who were sufficiently active decreased (Figure 4.1 and Table S4.1).

Figure 4.1: Proportion of adults aged 18–64 who met the physical activity guideline, by age group, 2014–15



Notes

1. 'Met physical activity guideline' involves completing at least 150 minutes of physical activity over 5 sessions in the 7 days prior to interview.
2. Denominator does not include individuals for whom measurement against the physical activity guideline was unknown in the 7 days prior to interview.

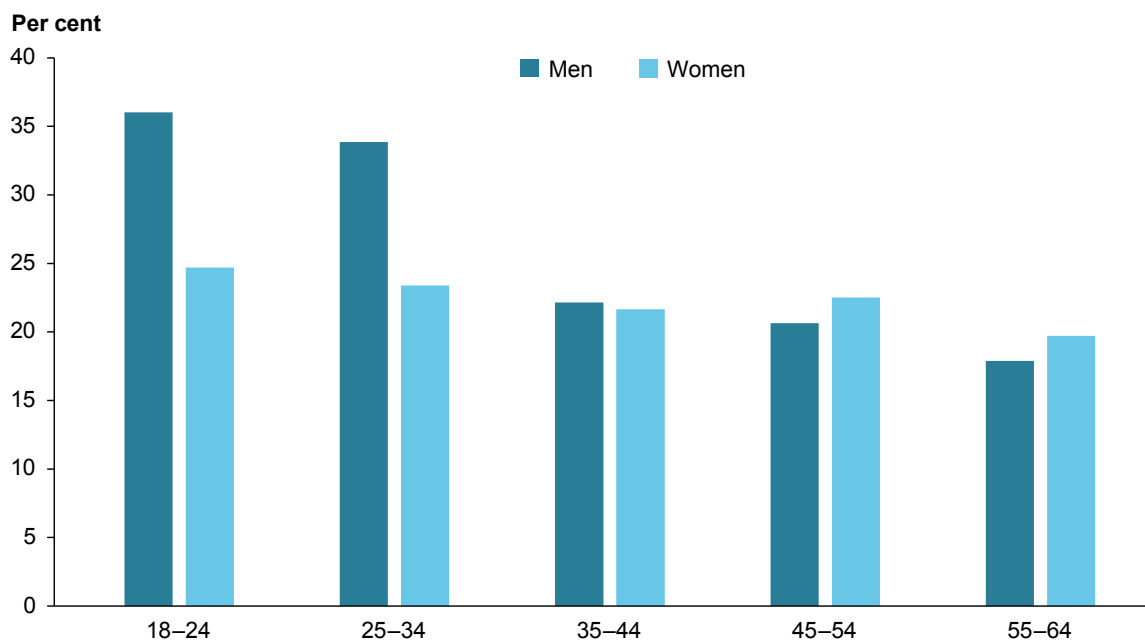
Source: AIHW analysis of ABS 2016.

Strength-based activity

Around one-quarter (24%) of adults aged 18–64 met the strength-based activity guideline (Box 4.1). Across age groups, adults aged 18–24 were most likely to meet this recommendation (30%). This proportion decreased steadily as age increased, with 19% of adults aged 55–64 completing strength-based activities on at least 2 days per week.

Overall, slightly more men than women aged 18–64 met the strength-based activity guideline (26% compared with 22%). For both men and women, the proportion meeting the guideline decreased as age increased. This decline was more pronounced in men than in women—particularly between men aged 25–34 (34%) and men aged 35–44 (22%). Such a decline was not seen in women of the same age groups—23% of women aged 25–34 and 22% of women aged 35–44 met the strength-based activity guideline. From age 45 onwards, the decline in the proportion of men meeting the strength-based guideline was minimal (Figure 4.2).

Figure 4.2: Proportion of adults aged 18–64 who met the strength-based activity guideline, by age group and sex, 2014–15



Notes

1. 'Met strength-based activity guideline' involves completing at least 2 days of strength-based activities in the 7 days prior to interview.
2. Denominator does not include individuals for whom measurement against the strength-based guideline was unknown in the 7 days prior to interview.

Source: AIHW analysis of ABS 2016.

Physical and strength-based activity

Previous reports of physical activity among adults have taken into account only the physical activity guideline (that is, completing 150 minutes (2 hours and 30 minutes) or more of physical activity over 5 or more sessions per week). However, completing a certain amount of strength-based activities per week is an integral component of the Guidelines.

About 1 in 5 (19%) adults aged 18–64 met both the physical activity and strength-based activity guidelines. This low proportion is largely driven by the fact that nearly 70% of adults aged 18–64 completed no strength-based activities on any days.

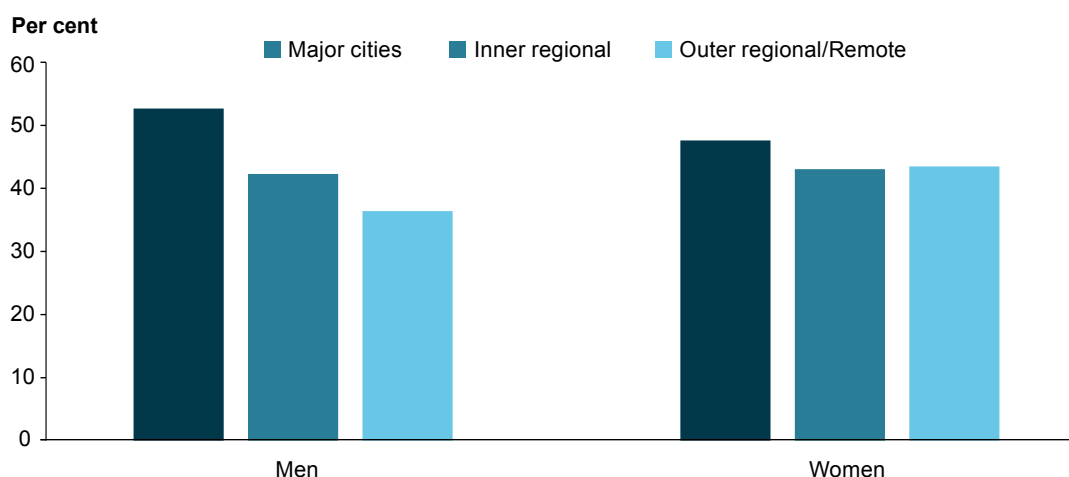
Population groups

Remoteness

The proportion of the adult population meeting the physical activity guideline varied across remoteness areas. In 2014–15, half of adults aged 18–64 (50%) living in *Major cities* met the guideline and were sufficiently active. This proportion was lower among adults living in *Inner regional* (43%) and *Outer regional/Remote* (40%) areas.

Just over half (53%) of men living in *Major cities* met the physical activity guideline, compared with 42% of men living in *Inner regional* areas and 36% of those in *Outer regional/Remote* areas. For women, just less than half (48%) of those living in *Major cities* met the physical activity guideline—a similar proportion to those living in *Inner regional* (43%) and *Outer regional/Remote* (43%) areas (Figure 4.3).

Figure 4.3: Proportion of adults aged 18–64 who met the physical activity guideline, by remoteness area and sex, 2014–15



Notes

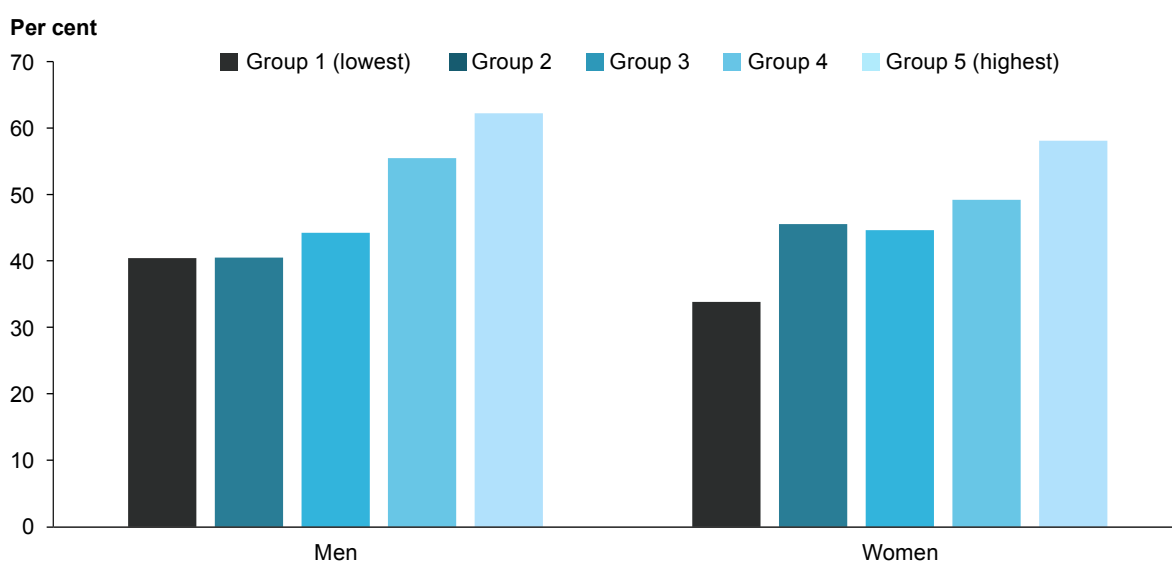
1. 'Met physical activity guideline' involves completing at least 150 minutes of physical activity over 5 sessions in the 7 days prior to interview.
2. Denominator does not include individuals for whom measurement against the physical activity was unknown in the 7 days prior to interview.

Source: AIHW analysis of ABS 2016.

Socioeconomic groups

The proportion of adults aged 18–64 who met the physical activity guideline decreased as relative socioeconomic disadvantage increased. In 2014–15, 6 in 10 (60%) adults aged 18–64 in the highest socioeconomic group (group 5) met the physical activity guideline, compared with around 4 in 10 (37%) of those in the lowest socioeconomic group (group 1). This decrease in physical activity participation with increasing socioeconomic disadvantage was observed in both men and women. Among men aged 18–64, a greater proportion in the highest socioeconomic group (62%) met the physical activity guideline, compared with the lowest 2 socioeconomic groups (both 40%). Among women aged 18–64, around 6 in 10 (58%) in the highest socioeconomic group met the physical activity guideline, compared with around 3 in 10 (34%) in the lowest socioeconomic group (Figure 4.4).

Figure 4.4: Proportion of adults aged 18–64 who met the physical activity guideline, by socioeconomic group and sex, 2014–15



Notes

1. 'Met physical activity guideline' involves completing at least 150 minutes of physical activity over 5 sessions in the 7 days prior to interview.
2. Denominator does not include individuals for whom measurement of the physical activity guideline was unknown in the 7 days prior to interview.
3. 'Group 1'–'Group 5' refers to area-based fifths, based on the ABS Index of Relative Socio-economic Disadvantage (ABS 2013c).

Source: AIHW analysis of ABS 2016.

Indigenous Australians

The 2012–13 NATSINPAS included questions about physical activity participation for all 7 days of the week for Indigenous adults aged 18 and over living in non-remote areas. Physical activity participation among Indigenous adults aged 18–64 was determined using the same measures as for all Australians (Box 4.1). For adults aged 18 and over, the survey collected information about the number of strength-based sessions over the previous week, rather than the number of days on which adults completed strength-based sessions. As a result, participation in strength-based activities is reported as ‘sessions’, rather than days. The 2012–13 NATSINPAS is not directly comparable with the 2014–15 NHS. Therefore, estimates reported for the non-Indigenous comparison group aged 18–64 come from the 2011–12 NNPAS.

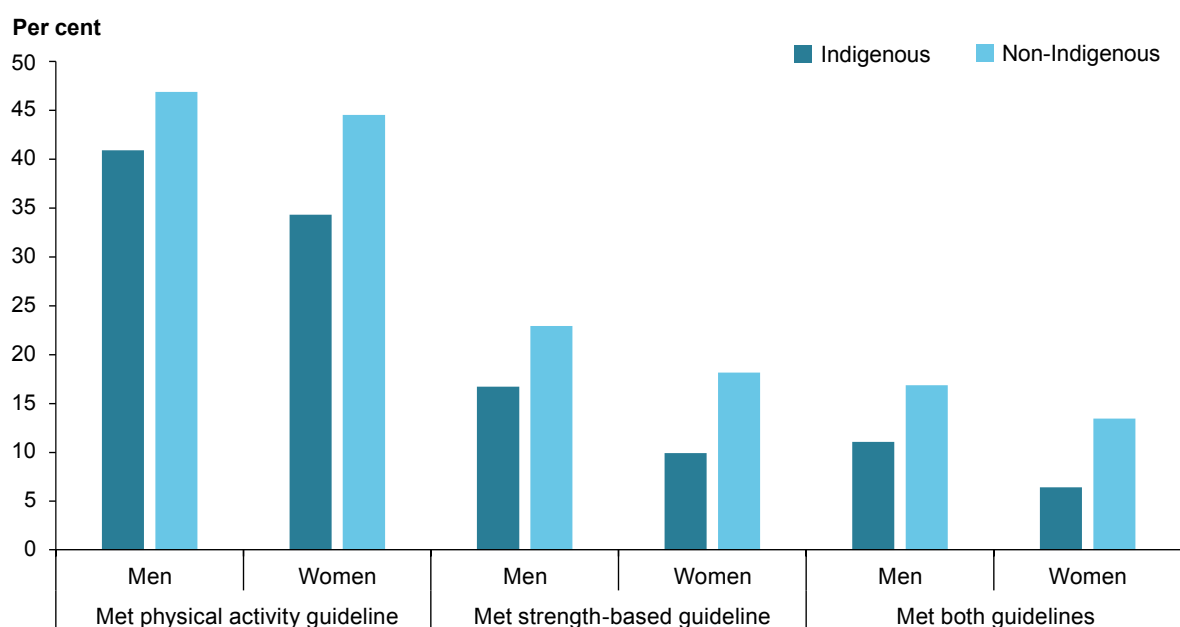
In 2012–13, after adjusting for age differences between Indigenous and non-Indigenous populations, a lower proportion (38%) of Indigenous adults aged 18–64 met the physical activity guideline, compared with non-Indigenous adults of this age (46%). Similarly, a lower proportion of Indigenous women (34%) met the physical activity guideline compared with 45% of non-Indigenous women (Figure 4.5).

Apparent differences between Indigenous men and women and Indigenous and non-Indigenous men were not found to be statistically significant (Table S4.2).

Around 1 in 10 (13%) Indigenous adults aged 18–64 met the strength-based activity guideline, compared with 2 in 10 (21%) non-Indigenous adults of the same age. This pattern was evident among both men and women (Figure 4.5 and Table S4.2).

Fewer than 1 in 10 (8.8%) Indigenous adults aged 18–64 met both the physical activity and strength-based activity guidelines, compared with 15% of non-Indigenous adults of the same age. Similarly, the proportion of non-Indigenous men and women aged 18–64 who met both the physical activity and strength-based guidelines was greater than the proportion of Indigenous men and women who met both (Figure 4.5 and Table S4.2).

Figure 4.5: Proportion of Indigenous and non-Indigenous adults aged 18–64 who met the physical activity, strength-based and both guidelines, by sex, 2012–13



Notes

1. ‘Met physical activity guideline’ involves completing at least 150 minutes of physical activity over 5 sessions in the 7 days prior to interview.
2. ‘Met strength-based activity guideline’ involves completing at least 2 sessions of strength-based activities in the 7 days prior to interview.
3. ‘Met both the physical activity and strength-based guidelines’ was recorded if at least 150 minutes of physical activity over 5 sessions and at least 2 sessions of strength-based activities were completed.
4. Denominator does not include individuals for whom measurements of meeting the physical activity or strength-based guidelines were unknown in the 7 days prior to interview.
5. Data are for non-remote areas, which comprise *Major cities, Inner regional and Outer regional* areas of Australia.
6. Non-Indigenous data are based on the National Nutrition and Physical Activity Survey, 2011–12.

Source: AIHW analysis of ABS 2015a and ABS 2018.

What activities are adults aged 18–64 doing?

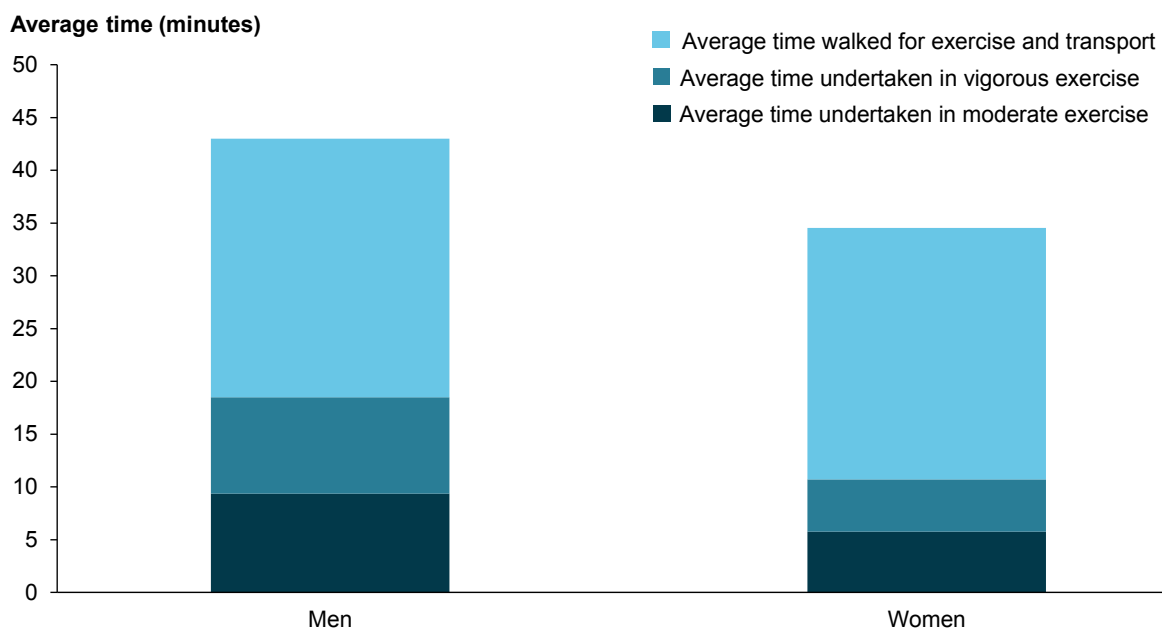
Average time spent by types of physical activity

In 2014–15, the average amount of physical activity that was undertaken for fitness, recreation, sport or transport by adults aged 18–64 was 39 minutes per day. This includes doing vigorous and moderate physical activity, as well as walking for fitness, recreation, sport or transport. On average, adults aged 18–64 spent:

- 7.0 minutes per day on vigorous physical activity
- 7.6 minutes per day on moderate physical activity
- 24 minutes per day walking for both exercise and transport.

The average amount of physical activity that was undertaken for fitness, recreation, sport or transport (which includes walking) by men aged 18–64 was 43 minutes per day—8.4 minutes more than the average for women of the same age (35 minutes per day). Men aged 18–64 also spent more time per day doing moderate and vigorous physical activity (9.4 minutes and 9.1 minutes per day, respectively), compared with women of the same age (5.8 minutes and 5.0 minutes per day, respectively). The average time spent walking for exercise and transport was similar for men and women (25 minutes for men and 24 minutes for women) (Figure 4.6).

Figure 4.6: Average amount of time (minutes) of physical activity undertaken per day for fitness, recreation, sport or transport by adults aged 18–64, by activity type and sex, 2014–15



Notes

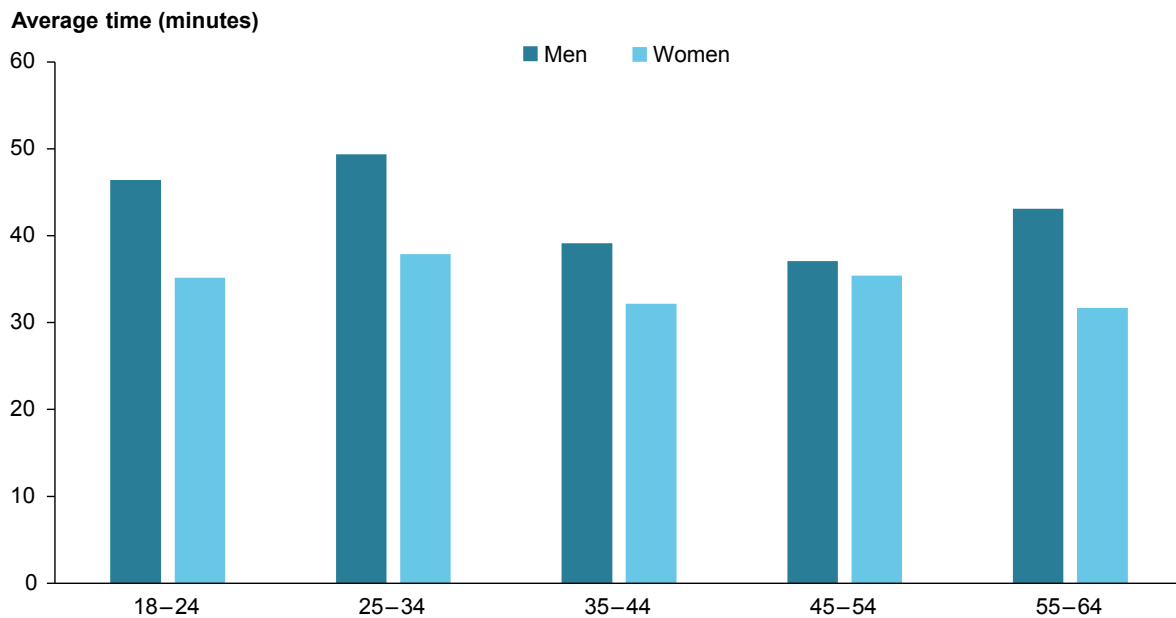
1. 'Moderate physical activity' is defined as physical activity at a level that causes the heart to beat faster and some shortness of breath, but during which a person can still talk comfortably.
2. 'Vigorous physical activity' is defined as physical activity at a level that causes the heart to beat a lot faster and shortness of breath that makes talking difficult between deep breaths.
3. Data are averaged over the 7 days prior to interview.
4. Data do not include individuals with unknown times spent on types of physical activity.

Source: AIHW analysis of ABS 2016.

Men aged 35–44 and 45–54 spent less time on physical activity for fitness, recreation, sport or transport (39 minutes and 37 minutes per day, respectively), compared with their older and younger counterparts (Figure 4.7 and Table S4.3).

For women, the time spent on physical activity for fitness, recreation, sport or transport varied more across age groups. Women aged 35–44 and 55–64 undertook the least amount of physical activity, doing 32 minutes per day, on average. Women aged 18–24, 25–34 and 45–54 completed slightly more physical activity per day (35, 38 and 35 minutes per day, on average, respectively) (Figure 4.7).

Figure 4.7: Average amount of time (minutes) of physical activity undertaken per day for fitness, recreation, sport or transport by adults aged 18–64, by age group and sex, 2014–15



Notes

1. Physical activities undertaken for fitness, recreation, sport or transport include moderate and vigorous-intensity physical activity and walking for exercise and transport.
2. Data are averaged over the 7 days prior to interview.
3. Data do not include individuals with unknown times undertaken in exercise for fitness, recreation, sport or transport.

Source: AIHW analysis of ABS 2016.

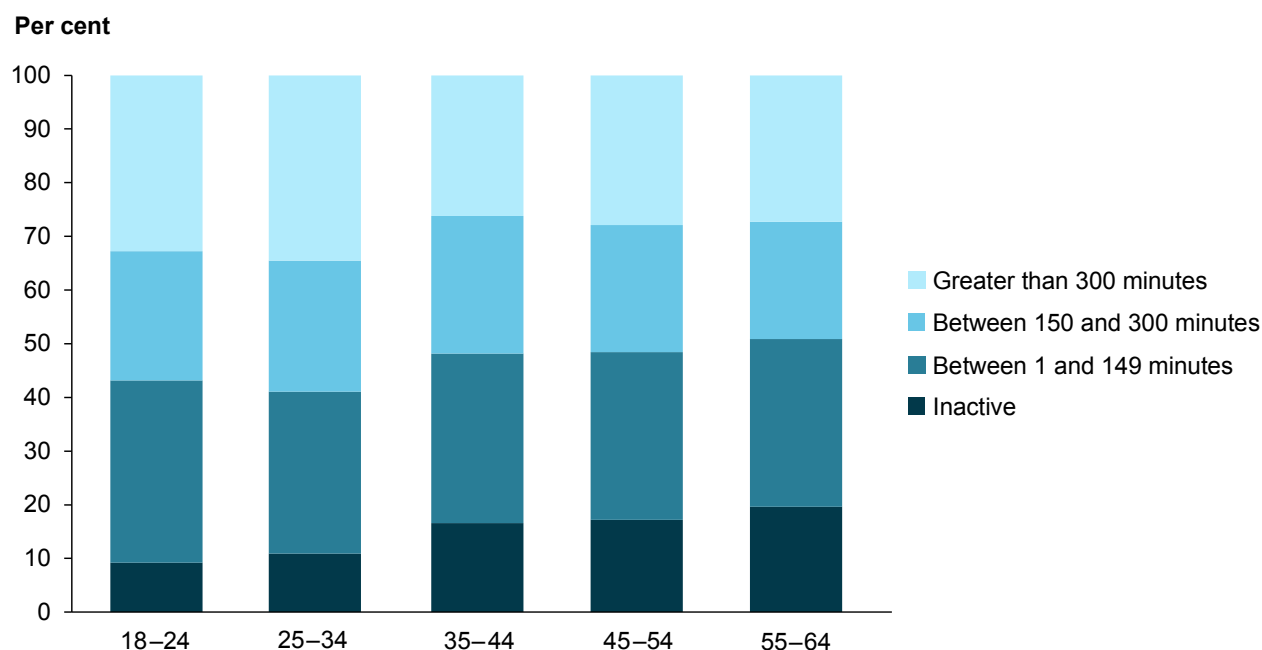
In 2014–15, 15% of adults aged 18–64 did not undertake any physical activity for fitness, recreation, sport or transport. Excluding these people who did not complete any form of physical activity, about one-third (32%) did less than 2 hours and 30 minutes of physical activity in a week. About one-quarter (24%) of adults did between 2 hours and 30 minutes and 5 hours of physical activity, and 30% completed over 5 hours of physical activity in a week.

The proportion of adults who did not complete any form of physical activity increased steadily with age, from about 1 in 10 (9.2%) 18–24 year olds to 2 in 10 (20%) 55–64 year olds. The proportion of adults who did some physical activity—but less than the 2 hours and 30 minutes specified by the Guidelines—was similar across age groups. Little difference was also seen in the proportion of adults who undertook between 2 hours and 30 minutes and 5 hours (between 150 and 300 minutes) of physical activity per week among the different age groups.

Interestingly, a large proportion of adults aged 18–64 was also completing more than 5 hours (300 minutes) of physical activity (Figure 4.8). However, the proportion of adults who completed more than 5 hours of physical activity varied as age increased. The proportion of adults who completed more than 5 hours of physical activity was highest among adults aged 18–24 (33%) and 25–34 (35%), after which the proportion decreased to 26% among adults aged 35–44. From age 35 onwards, the proportions of adults completing more than 5 hours of physical activity were similar, at 28% for the 45–54 age group and 27% for the 55–64 age group (Figure 4.8).

Across age groups, 30% to 34% of adults completed less than 2 hours and 30 minutes of physical activity (but were not inactive) (Figure 4.8 and Table S4.5).

Figure 4.8: Proportion of adults aged 18–64 within each time category (minutes) of exercise undertaken for fitness, recreation, sport or transport, by age group, 2014–15



Notes

1. Physical activities undertaken for fitness, recreation, sport or transport include moderate and vigorous-intensity physical activity and walking for exercise and transport.
2. Data do not include individuals with unknown times undertaken in exercise for fitness, recreation, sport or transport.

Source: AIHW analysis of ABS 2016.

Common types of sport and recreational physical activity

In 2016–17, the 3 most common activities for physical activity participation reported among Australian adults aged 18–64 were:

- Recreational walking (41%)
- Fitness/gym activities (36%)
- Running, jogging, athletics such as track and field (18%) (ASC 2017b).

The main barrier to participating in sport or non-sporting activities that remained consistent across all age groups was *Not enough time or too many other commitments* (37%). Among those aged 45–54 and 55–64, *Poor health or injury* was also reported as a top barrier to participation (25% and 28% respectively). Around 1 in 10 (13%) of 18–64 year olds also reported having a *Physical job* as a top barrier that prevented participation levels (ASC 2017b).

Aside from walking for transport, there are no measures of other incidental physical activity (for example work activities) captured in the surveys such as AusPlay and the 2014–15 NHS. Based on the 2014–15 NHS, walking was the only form of physical activity for 40% of adults aged 18–64:

- 16% of adults aged 18–64 walked for transport as their only form of physical activity
- 11% reported walking for exercise as their only form of physical activity
- 13% reported walking for both exercise and transport as their only form of physical activity.

In 2016–17, the 3 most common categories selected as motivating factors for participating in sporting or non-sporting activities among adults aged 18–64 were:

- *Physical health or fitness* (80%)
- *Fun/enjoyment* (46%)
- *Social reasons* (28%) (ASC 2017b).

Time spent on sedentary activities

Box 4.2: Defining sedentary behaviour by employment status

‘Sedentary behaviour by employment status’ for adults aged 18–64 is reported as the average amount of time spent sitting at leisure on a usual weekday by employment status—that is, whether the adult worked full-time, part-time or were not working (either unemployed or not in the labour force).

Full-time employed adults

‘Full-time employed adults’ are defined as those working 35 hours or more in a week. Time spent sitting at leisure included watching TV or using a computer before and after work, as well as time spent sitting in other leisure activities, such as reading or sitting down for meal times with family. For adults working full-time, the average time spent sitting at work on a usual weekday is also reported—which includes time spent sitting at a desk as well as sitting during snack and meal times. It should be noted that the survey questions do not distinguish between whether computer use before and after work was work-related or for leisure, among full-time employed adults.

Part-time employed adults

‘Part-time employed adults’ are defined as those working between 1 and 34 hours per week (inclusive). Time spent sitting at leisure included time spent sitting while watching TV or using a computer on a usual weekday (that is, the full day, not just before and after work), as well as time spent sitting in other leisure activities such as reading or meal times with family. It should be noted that, for part-time employed adults, the survey questions do not distinguish between whether the time spent sitting while using a computer during the day was for work or for leisure.

Non-working adults

‘Non-working adults’ are defined as those who were unemployed or not in the work force (for example, retired). Time spent sitting at leisure included time spent sitting while watching TV or using a computer on a usual weekday, as well as time spent sitting in other leisure activities such as reading or meal time with family.

In 2014–15, according to the NHS, 53% of adults aged 18–64 worked full-time (35 hours or more); 24% worked part-time (between 1 and 34 hours); and 23% were not in the labour force.

Of adults who were employed (whether full-time or part-time):

- 44% reported that their activity at work on a typical day was mostly sitting
- 21% reported mostly standing for work
- 19% reported mostly walking for work (for example, customer service representatives in retail environments)
- 15% reported mostly heavy labour and physically demanding work (for example, builders).

Overall, adults aged 18–64 spent, on average, 4 hours and 29 minutes sitting at leisure on a usual weekday. As discussed in Box 4.2, the following results are broken down by employment status—given that it is expected that the amount of leisure time differs by employment status.

Full-time employed adults

In 2014–15, full-time employed adults aged 18–64 spent, on average, 3 hours and 57 minutes sitting at work on a usual weekday. The average time full-time employed adults spent sitting at leisure on a usual weekday was 3 hours 35 minutes.

Among men and women aged 18–64 who were employed full-time:

- women spent, on average, 4 hours and 14 minutes sitting at work—26 minutes more than the average time spent by men (3 hours and 47 minutes)
- men spent slightly more time than women sitting at leisure on a usual weekday: 3 hours and 42 minutes, compared with 3 hours and 23 minutes for women.

The amount of time spent sitting at leisure was lowest among adults aged 35–44, at an average of 3 hours and 20 minutes on a usual weekday. This was 34 minutes less than for the 18–24 year age group as a whole, which averaged 3 hours and 54 minutes sitting at leisure on a usual weekday (Figure 4.9).

Part-time employed adults

In 2014–15, among part-time employed adults aged 18–64, the average amount of time spent sitting at leisure on a usual weekday was 4 hours and 57 minutes.

Similar to full-time employed adults, men aged 18–64 working part-time spent a greater amount of time sitting at leisure (5 hours and 31 minutes), compared with women of the same age and employment status (4 hours and 43 minutes).

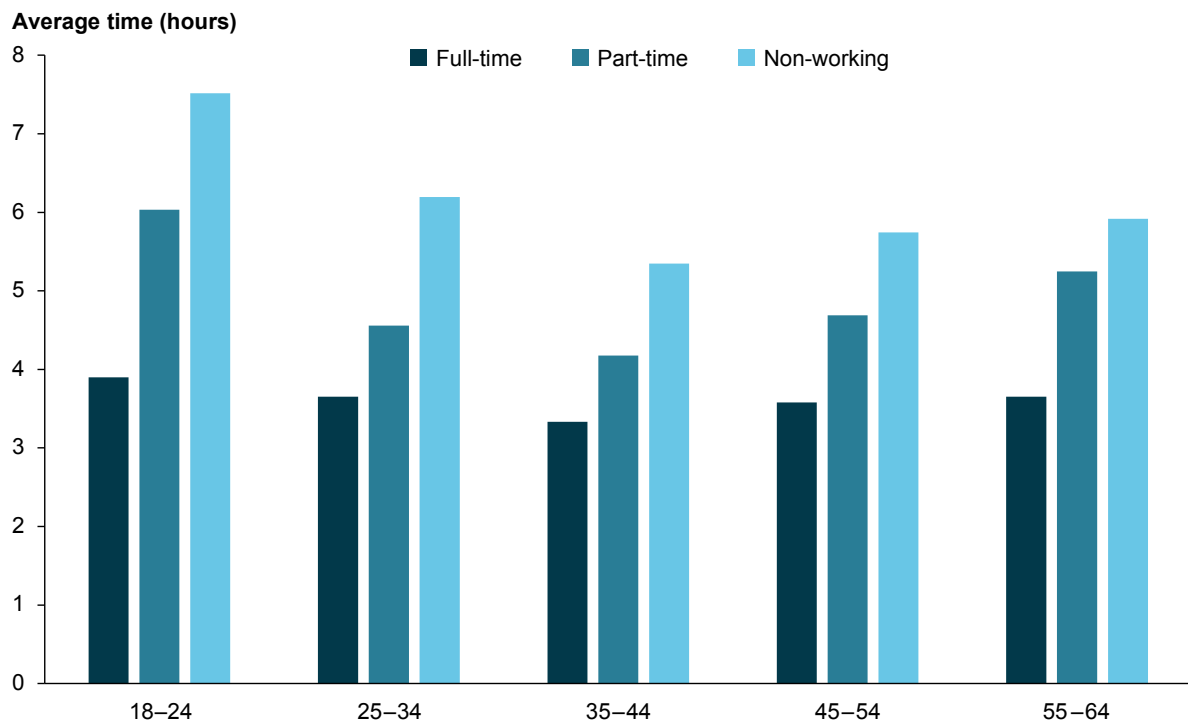
The time spent sitting at leisure varied across the age groups for part-time employed adults aged 18–64. Adults aged 18–24 spent the most time sitting at leisure, at an average of 6 hours and 2 minutes on a usual weekday. This was almost 2 hours more than adults aged 35–44, who spent the least time sitting at leisure, at an average of 4 hours and 11 minutes on a usual weekday (Figure 4.9).

Non-working adults

The average time spent sitting at leisure on a usual weekday for adults who were not employed or in the labour force was 6 hours and 8 minutes. Men spent, on average, 7 hours and 10 minutes sitting at leisure, compared with women, who spent, on average, 5 hours and 32 minutes.

The average time spent sitting at leisure varied across age groups for non-working adults. Adults aged 18–24 spent the most time sitting at leisure—on average, 7 hours and 31 minutes. This is compared with adults aged 35–44 who spent, on average, 5 hours and 21 minutes sitting at leisure on a usual weekday (Figure 4.9).

Figure 4.9: Average time (hours) spent sitting at leisure on a usual weekday among adults aged 18–64, by employment status and age group, 2014–15



Notes

1. 'Full-time employed adults' are defined as those working 35 hours or over in a week.
2. 'Part-time employed adults' are defined as those working between 1 and 34 hours in a week.
3. 'Non-working adults' are defined as those who are unemployed or not in the labour force (for example, retired).
4. 'Sitting at leisure' for full-time employed adults includes time spent sitting watching TV or using a computer before and after work or sitting in other leisure activities (for example, reading).
5. 'Sitting at leisure' for part-time employed and non-working adults includes time spent sitting watching TV or using a computer (the full day) or sitting in other leisure activities (for example, reading).
6. Data are averaged over the 7 days prior to interview.
7. Data do not include individual with unknown times spent sitting at leisure.

Source: AIHW analysis of ABS 2016.

5 Physical activity among Australians aged 65 and over

For Australians aged 65 and over, physical activity becomes important in maintaining energy levels, increasing joint movement, preventing or managing mental health problems (by reducing stress and anxiety), and improving mood and memory function (Department of Health 2017d). Physical activity can prevent or improve many health risk factors and chronic diseases such as hypertension, high blood cholesterol, diabetes and CVD (Taylor 2013; Warburton et al. 2006). Recent research has also indicated that even modest amounts of physical activity participation in the elderly can substantially decrease the risk of developing CVD, when compared with being physically inactive (Lachman et al. 2018). Increasing moderate physical activity by just 15 minutes, 5 times a week, for those aged 65 and over who are 'at risk' of disease could produce the largest health gains and reduce future disease burden by 19% by 2020 (AIHW 2017a). Improved quality of life, survival rates and treatment outcomes have also been associated with increases in physical activity undertaken as part of a medical or rehabilitation management plan, especially for individuals diagnosed with CVD or cancer (Durstine et al. 2013). Additionally, physical activity participation among older adults decreases the risk of mortality (Llamas-Velasco et al. 2016).

Refer to Box 5.1 for the physical activity recommendations for adults aged 65 and over.

Box 5.1: Physical activity recommendations for Australians (aged 65 and over)

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 (1/2 hour) of moderate-intensity physical activity on most (preferably all) days.
4. Older people who have stopped engaging in physical activity, or who are starting a new physical activity, should start at a level that is easily manageable and gradually build up to 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, providing recommended safety procedures and guidelines are adhered to.

Source: Department of Health 2017a.

How we are reporting against the Guidelines:

- Outcome for guideline 3 is reported as the proportion of adults aged 65 and over who completed 30 minutes of physical activity on 5 or more days in the 7 days prior to interview. For Aboriginal and Torres Strait Islander adults and non-Indigenous adults aged 65 and over, outcome for guideline 3 is reported as the proportion of adults who did at least 5 sessions (instead of days) of physical activity and walking for transport in the 7 days prior to interview. This is referred to as the **physical activity guideline**.
- There is no specific strength-based activity guideline for this age group, as there is for adults aged 18–64; instead, guideline 2 recommends incorporating a range of physical activities, including some strength-based activities. It is reported as 'the proportion of adults aged 65 and over who completed at least 2 days of strength or toning activities in the 7 days prior to interview'—to enable comparison with younger adults. For Aboriginal and Torres Strait Islander adults and non-Indigenous adults aged 65 and over, guideline 2 is reported as the proportion of adults who undertook at least 2 sessions (instead of days) of strength-based activities in the 7 days prior to interview. This is referred to as the **strength-based activity guideline**.

How many Australians aged 65 and over are meeting the Guidelines?

Age and sex

In 2014–15, one-quarter (25%) of people aged 65 and over met the physical activity guideline of doing 30 minutes of physical activity on 5 or more days. A smaller proportion (15%) did 30 minutes of physical activity on all 7 days.

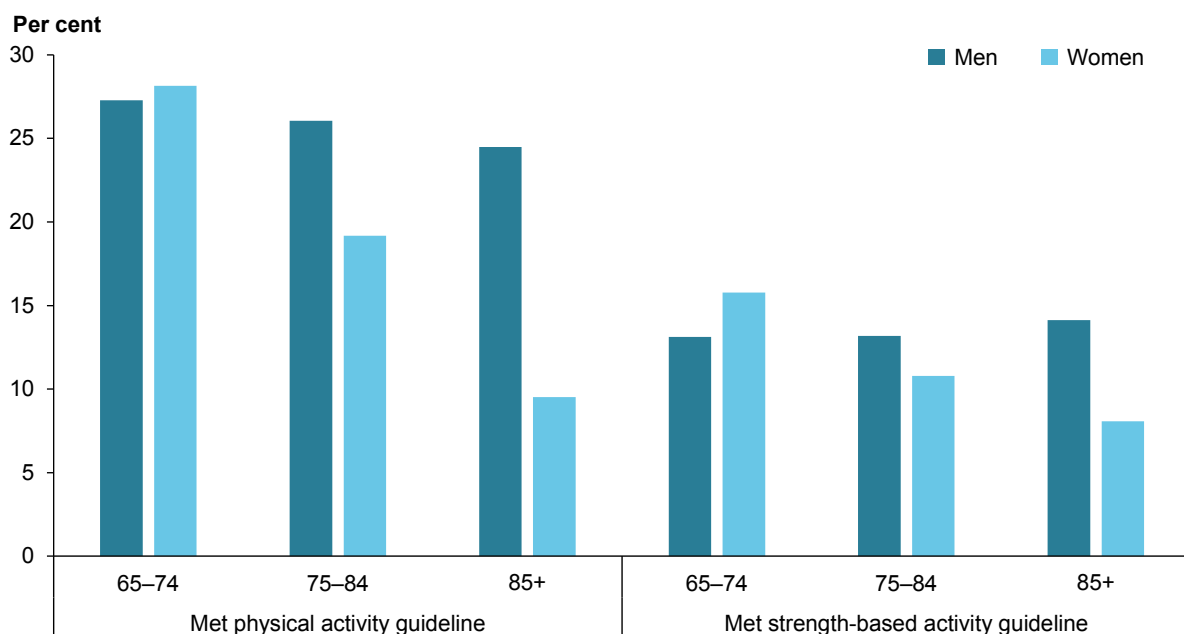
The majority (84%) of people aged 65 and over completed no strength-based activities at all and only 13% met the strength-based activity guideline. A very small proportion (3.7%) incorporated strength-based activities on all 7 days.

Fewer than 1 in 10 (6.5%) of those aged 65 and over did 30 minutes of physical activity on 5 or more days and also completed at least 2 days of strength-based activities.

The proportions of men and women aged 65 and over who met the physical activity guideline were similar—27% for men and 23% for women. However, with increasing age, the proportion meeting the physical activity guideline among men remained the same, while for women the proportion decreased. Among women, 28% of those aged 65–74 met the physical activity guideline, compared with 19% of women aged 75–84, and only 9.5% of women aged 85 and over (Figure 5.1).

For strength-based activity, 16% of women aged 65–74 met the guidelines, compared with 8.1% of women aged 85 and over. This decrease was not seen in men, where the proportion completing at least 2 days of strength-based activities remained relatively similar for all age groups (around 13%–14%) (Figure 5.1).

Figure 5.1: Proportion of Australians aged 65 and over who met the physical activity and strength-based guideline, by activity type age group and sex, 2014–15



Notes

1. 'Met physical activity guideline' involves completing at least 30 minutes of moderate-intensity physical activity on at least 5 days of the 7 days prior to interview.
2. 'Met strength-based activity guideline' involves completing at least 2 days of strength-based activities in the 7 days prior to interview.
3. Denominator does not include individuals for whom measurements of meeting the physical activity or strength-based guidelines were unknown in the 7 days prior to interview.

Source: AIHW analysis of ABS 2016.

Population groups

Remoteness

In 2014–15, about one-quarter (26%) of Australians aged 65 and over living in *Major cities* met the physical activity guideline on 5 or more days. This proportion was slightly greater than for those living in *Outer regional/Remote* areas (20%).

Among men aged 65 and over, the proportion who met the physical activity guideline was similar across all remoteness areas (Figure 5.2). However, there was variation across remoteness areas among women: only 15% of women age 65 and over living in *Outer regional/Remote* areas met the physical activity guideline, compared with 25% of their counterparts living in *Major cities* (Figure 5.2).

Figure 5.2: Proportion of Australians aged 65 and over who met the physical activity guideline, by remoteness area and sex, 2014–15



Notes

1. 'Met physical activity guideline' involves completing at least 30 minutes of moderate-intensity physical activity on at least 5 days of the 7 days prior to interview.
2. Denominator does not include individuals for whom measurement against the physical activity guideline was unknown in the 7 days prior to interview.

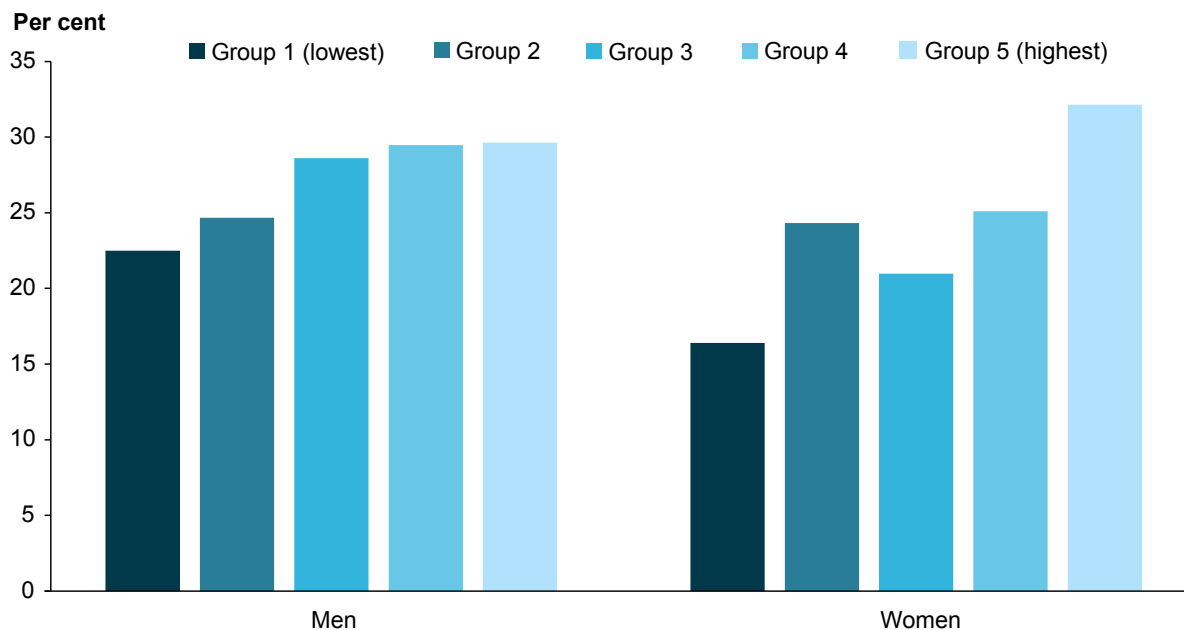
Source: AIHW analysis of ABS 2016.

Socioeconomic groups

A greater proportion of Australians aged 65 and over in the highest socioeconomic group met the physical activity guideline (31%), compared with those in the lowest socioeconomic group (19%).

Among women aged 65 and over, the proportion meeting the physical activity guideline halved between the highest and lowest socioeconomic groups: around 3 in 10 (32%) of women in the highest socioeconomic group met the guideline, compared with 16% in the lowest socioeconomic group. This pattern was not observed among men aged 65 and over (Figure 5.3).

Figure 5.3: Proportion of Australians aged 65 and over who met the physical activity guideline, by socioeconomic group and sex, 2014–15



Notes

1. 'Met physical activity guideline' involves completing at least 30 minutes of moderate-intensity physical activity on at least 5 days of the 7 days prior to interview.
2. Denominator does not include individuals for whom measurement against the physical activity guidelines was unknown in the 7 days prior to interview.
3. 'Group 1'-'Group 5' refer to area-based fifths, based on the ABS Index of Relative Socio-economic Disadvantage (ABS 2013c).

Source: AIHW analysis of ABS 2016.

Indigenous status

It is recognised that health conditions associated with ageing and mortality rates occur at younger ages among Aboriginal and Torres Strait Islander populations (ANAO 2017). Because of this, aged care for these populations is offered from 50 years of age rather than from 65 years, as occurs among the broader Australian population (ANAO 2017). However, the Guidelines are developed for the general population and therefore, within the context of this report, 'older' Indigenous Australians have been defined as those aged 65 and over.

The 2012–13 NATSINPAS collected information on the number of times (rather than days) adults aged 65 and over did physical activity or walked for transport and the number of times (rather than days) they completed strength-based activities in the 7 days prior to interview. As a result, participation in physical activities and strength-based activities is reported as 'sessions', rather than days. The 2012–13 NATSINPAS is not directly comparable with the 2014–15 NHS. Therefore, estimates reported for the non-Indigenous comparison group aged 65 and over come from the 2011–12 NNPAS.

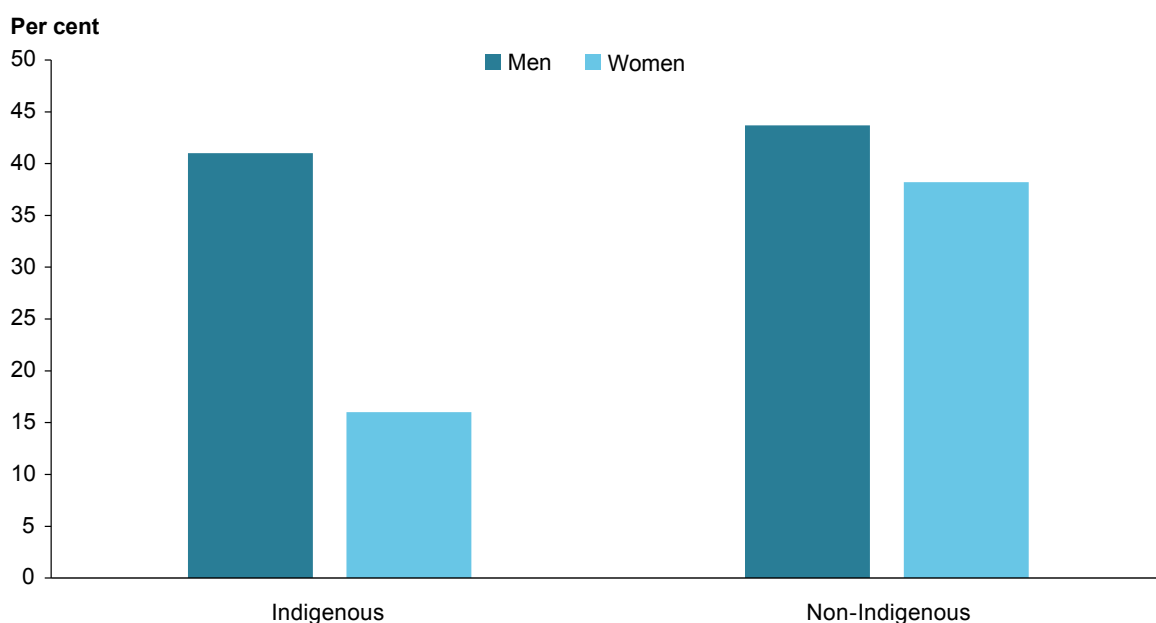
Physical activity

In 2012–13, around one-quarter (27%) of Indigenous adults aged 65 and over met the physical activity guideline, compared with 41% of non-Indigenous adults aged 65 and over.

More Indigenous men than women met the physical activity guideline (41% compared with 16%). This differs from the non-Indigenous population, where the proportions meeting the physical activity guideline were similar between the sexes (Table S5.3).

When comparing the Indigenous and non-Indigenous populations aged 65 and over, the proportions of men meeting the physical activity guideline were similar (41% compared with 44%, respectively). However, among women, the proportion of non-Indigenous women meeting the physical activity guideline was more than double the proportion of Indigenous women meeting the physical activity guideline (38% compared with 16%) (Figure 5.4).

Figure 5.4: Proportion of Australians aged 65 and over who met the physical activity guideline, by Indigenous status and sex, 2012–13



Notes

1. 'Met physical activity guideline' involves at least 5 sessions of physical activity and walking for transport in the 7 days prior to interview.
2. Denominator does not include individuals for whom measurement against the physical activity guideline was unknown in the 7 days prior to interview.
3. Data are for non-remote areas, which comprise *Major cities*, *Inner regional* and *Outer regional* areas of Australia.
4. Non-Indigenous data are based on the National Nutrition and Physical Activity Survey, 2011–12.

Source: AIHW analysis of ABS 2015a and ABS 2018.

Strength-based activity

A similar proportion of Indigenous adults aged 65 and over met the strength-based guideline (9.4%), compared with non-Indigenous adults aged 65 and over (10%). This pattern was the same for both men and women.

Physical activity and strength-based activity

Overall, 5.3% of Indigenous adults aged 65 and over met the physical activity and strength-based activity guidelines. This was similar to non-Indigenous adults aged 65 and over, among whom 6.6% met both the physical activity and strength-based activity guidelines.

What activities are Australians aged 65 and over doing?

Time spent by types of physical activities

In 2014–15, Australians aged 65 and over spent, on average, a total of 29 minutes per day on physical activity for fitness, recreation, sport or transport to get to places. On average, adults aged 65 and over spent:

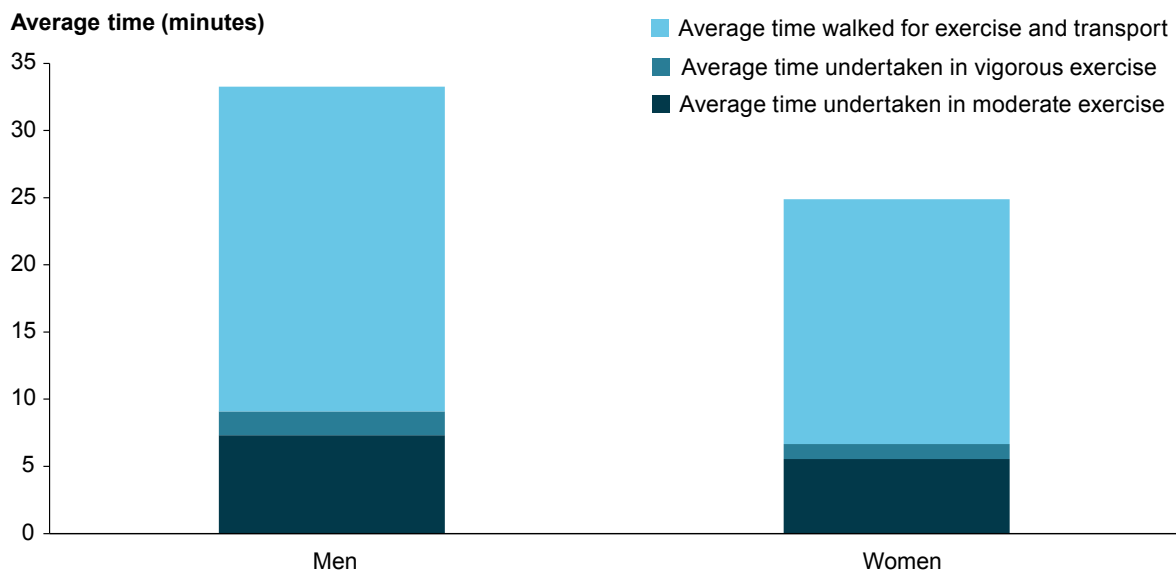
- 6.4 minutes per day on moderate physical activity
- 1.4 minutes per day on vigorous physical activity
- 21 minutes per day on walking for both exercise and transport.

Adults who did walking as their only form of physical activity (that is, either as exercise or transport) spent on average:

- 8.7 minutes per day walking for transport only
- 12 minutes per day walking for fitness, recreation or sport only.

The average amount of physical activity that was undertaken for fitness, recreation, sport or transport (which includes walking) among men aged 65 and over was 33 minutes per day—8.4 minutes more than the average for women of the same age (25 minutes per day). Men and women aged 65 and over spent similar amounts of time doing moderate and vigorous physical activity. However, men aged 65 and over spent a greater amount of time walking for exercise and transport, compared with women of the same age group (24 minutes and 18 minutes, respectively) (Figure 5.5).

Figure 5.5: Average time spent per day (minutes) on moderate and vigorous exercise and on walking for sport or transport by adults aged 65 and over, by activity type and sex, 2014–15



Notes

1. 'Moderate physical activity' is defined as physical activity at a level that causes the heart to beat faster and some shortness of breath, but during which a person can still talk comfortably.
2. 'Vigorous physical activity' is defined as physical activity at a level that causes the heart to beat a lot faster and shortness of breath that makes talking difficult between deep breaths.
3. Data are averaged over the 7 days prior to interview.
4. Data do not include individuals with unknown times spent on types of physical activity.

Source: AIHW analysis of ABS 2016.

Types of sport and recreational physical activity

In 2016–17, the most common sporting and non-sporting activities undertaken by adults aged 65 and over included:

- Recreational walking (62%)
- Fitness/gym (26%)
- Swimming (12%)
- Golf (10%) (ASC 2017b).

Walking for transport formed a relatively central component of exercise for adults aged 65 or over. Based on the NHS, in 2014–15, about 2 in 5 (19%) of Australians aged 65 and over walked for transport as their only form of physical activity.

For this population group, the most common barriers to participation in sporting or non-sporting activities included:

- *Poor health or injury* (48%)
- *Increasing age or too old* (18%)
- *Not enough time or too many commitments* (11%)
- *Disability* (11%) (ASC 2017b).

The most common motivating factors for participating in sporting or non-sporting activities included:

- *Physical health or fitness* (79%)
- *Fun/enjoyment* (40%)
- *Social reasons* (27%) (ASC 2017b).

Time spent on sedentary activities

Box 5.2: Defining sedentary behaviour by employment type

For adults aged 65 and over, sedentary behaviour is reported for adults working in any capacity (either full-time or part-time) and for non-working adults (unemployed or not in the labour force).

Working older adults

‘Working older adults’ are defined as adults aged 65 and over who are working in any capacity, either full-time (greater than or equal to 35 hours per week) or part-time (less than 35 hours per week). For these adults, sedentary behaviour is measured as the average amount of time spent sitting at leisure per day, which includes sitting:

- while watching TV or using a computer before and after work for older adults working full-time
- while watching TV or using a computer (that is, the full day, not just before and after work) for older adults working part-time
- in other leisure activities, such as reading or sitting down for meal times with family.

For adults working full-time, the average amount of time spent sitting at work on a usual weekday—which includes sitting at a desk as well as sitting during snack and meal times—is also reported.

It should be noted that survey questions regarding computer use do not distinguish between whether the use was work-related or purely for leisure.

Non-working older adults

‘Non-working older adults’ are defined as adults aged 65 and over who are unemployed or not in the labour force (for example, retired). For these adults, sedentary behaviour is measured as the average amount of time spent sitting at leisure on a usual weekday, which includes sitting:

- while watching TV or using a computer
- in other leisure activities, such as reading or sitting down for meal times with family.

In 2014–15, 14% of adults aged 65 and over were working either full-time or part-time (with only 6.0% of adults aged 65 and over working full-time), while 86% were either not in the labour force (for example, retired) or unemployed. Of the adults who were still working in some capacity, 41% were working full-time and 59% were working part-time.

Employed older adults

In 2014–15, adults aged 65 and over who were working in any capacity spent, on average, 4 hours and 57 minutes sitting at leisure. Men and women in this age group spent a similar amount of time sitting at leisure, at an average of 5 hours and 1 minute on a usual weekday for men, and an average of 4 hours and 51 minutes for women.

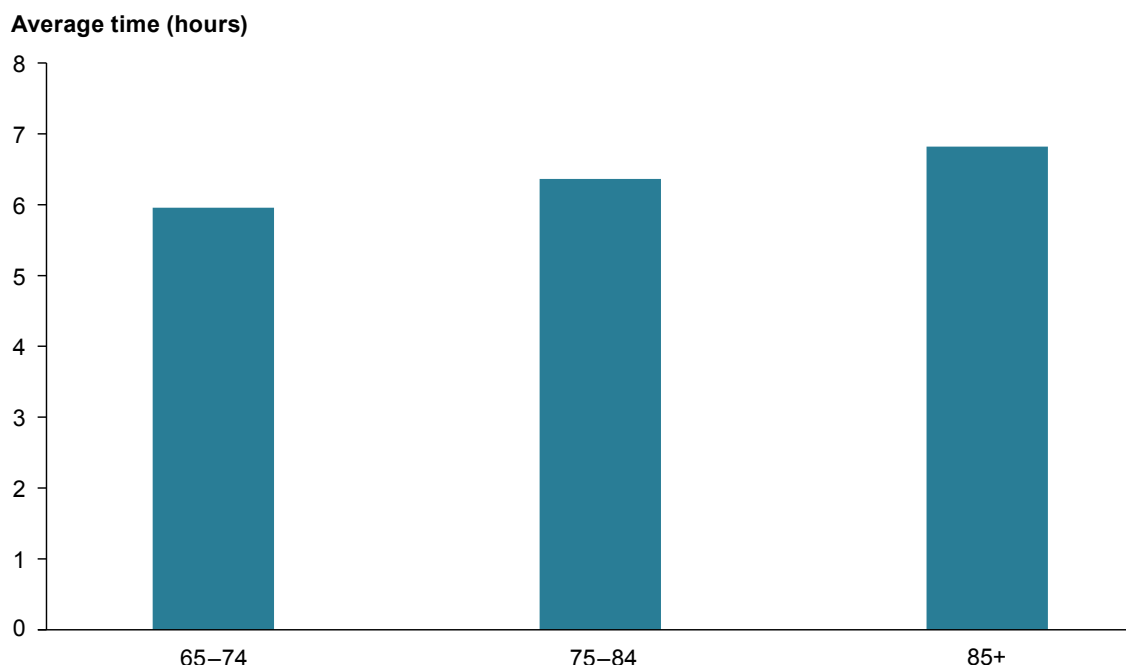
Among older adults aged 65 and over who were working full-time, the average time spent sitting at work on a usual weekday was 3 hours and 44 minutes. Men spent more time sitting at work, at an average of 3 hours and 52 minutes, compared with women, who spent an average of 3 hours and 12 minutes sitting at work.

Non-working adults

The average time spent sitting at leisure on a usual weekday for non-working adults aged 65 and over was 6 hours and 11 minutes. This was similar between men and women (6 hours and 15 minutes and 6 hours and 8 minutes, respectively).

Overall, there were differences by age group in the time spent sitting at leisure for those aged over 65. Adults aged 65–74 spent the least time, at an average of 5 hours and 58 minutes, compared with adults aged 75–84 and 85 and over who sat at leisure for an average of 6 hours and 22 minutes and 6 hours and 50 minutes, respectively (Figure 5.6).

Figure 5.6: Average time (hours) spent sitting at leisure on a usual weekday by non-working adults aged 65 and over, by age group, 2014–15



Notes

1. Sitting at leisure for non-working adults includes time spent sitting watching TV or using a computer (the full day) and sitting in other leisure activities (for example, reading).
2. Data are averaged over the 7 days prior to interview.
3. Data do not include individuals with unknown times spent sitting at leisure.

Source: AIHW analysis of ABS 2016.

6 Discussion

This report measured physical and sedentary activity participation against Australia's Physical Activity and Sedentary Behaviour Guidelines, and drew comparisons between different population groups.

Overall, the proportion of the Australian population completing the recommended amount of physical activity for each age group was low: 30% for children aged 2–17 and 44% for adults aged 18 and over. Key findings of the report and their potential causes and implications, including limitations of the analyses, are discussed in this chapter.

Physical activity among children and young people

Key findings

The physical activity guidelines were met by:

- 6 in 10 (61%) children aged 2–5
- 1 in 4 (26%) children aged 5–12
- 1 in 13 (7.9%) young people aged 13–17.

Patterns of sedentary behaviour in children aged 2–17 varied; however, in general, few met the sedentary screen-based behaviour guideline:

- 1 in 4 (25%) children aged 2–5
- 1 in 3 (35%) children aged 5–12
- 1 in 5 (20%) young people aged 13–17.

The results for the children aged 2–5 in this study differ from other recent Australian analyses, which have shown that 97% of 2 year olds (Santos et al. 2017) and 93% of 4 year olds (Cliff et al. 2017) are meeting the physical activity guideline. These latter studies used accelerometers, rather than parent-reported information, on groups of children to measure daily activity over 7 consecutive days. Parent-reported information may not capture all the activities undertaken by their child each day, especially if children are attending school or day care. Additionally, children do not generally participate in regular and easily distinguishable blocks of physical activity, as often observed in adults, which further complicates data collection (Cliff & Janssen 2011). As a result, accelerometers are a more accurate measure in which to assess physical activity levels in children than parent self-report (Sarker et al. 2015).

Between the 2–5 and 5–17 age groups there is a large decrease in the proportion of children meeting the Guidelines and a decrease in average time per day spent on physical activity.

Commencement of full-time schooling generally occurs in the year children turn 5 in Australia, and in 2011 approximately 82% of 5 year old children were in full-time schooling according to data at 1 July 2016 (ABS 2017b). The decrease in physical activity levels presented in this report may result from changes to more structured days, with discrete classroom learning and outdoor activities. Some schools counteract increased sitting periods by promoting physical activity programs and extra-curricular sporting activities within the educational environment (Telford et al. 2012a; Telford et al. 2012b).

For school-aged children, data accuracy may be enhanced by including the time individuals are physically active in PE lessons, during breaks and scheduled class time. This could provide a clearer representation of activity levels and areas that need to be addressed to improve school activity programs (Schranz et al. 2016).

Participating in organised sport has been associated with increased moderate and vigorous physical activity in children, as well as decreased levels of sedentary behaviour (Jago et al. 2017). Findings from the ASC AusPlay Survey show that children of parents who are involved in organised sport are more likely to be involved in organised sport themselves (ASC 2017a).

Rises in more 'protective' parenting practices are in part a result of fear and concerns for risks, safety or dangers related to unsupervised active travel to school or unstructured outdoor play (Crawford et al. 2015). Parents today also face new challenges in an environment that is becoming increasingly technology-based, where it can be hard to find a balance between sedentary screen-based activities, learning activities and non-screen-based activities. However, inactive children can still become physically active, as any physical activity can induce positive health benefits (WHO 2011).

Physical activity among adults

Key findings

- Just under half (48%) of adults aged 18–64 and only 25% of adults aged 65 and over met the physical activity guideline.
- Around one quarter (24%) of adults aged 18–64 and around 1 in 7 (13%) adults aged 65 and over met the strength-based activity guideline.
- Adults aged 18–64 spent 4 hours and 29 minutes sitting at leisure on a usual weekday.
- Adults aged 65 and over spent 6 hours sitting at leisure on a usual weekday.

A key finding of the report is the decline in participation in physical activity and strength-based activities in adults as age increased, accompanied by an increase in time spent on sedentary activities with increasing age. This is important to highlight, given that both physical and strength-based activities are among recommended treatment and prevention options for many chronic diseases that become more common with age, while sedentary behaviour is a known risk factor for many conditions (Durstine et al. 2013; González et al. 2017). In particular, physical inactivity has been suggested to be responsible for 10–20% of 7 related diseases (AIHW 2017a).

If all age groups in populations at risk of disease due to physical inactivity completed an extra 30 minutes of brisk walking 5 days a week, this could decrease future disease burden by 26% (AIHW 2017a). Research has also indicated that reducing physical inactivity in Australia by 10% could provide a reduction to health-sector costs of \$96 million (Cadilhac et al. 2011).

Occupational physical activities and incidental activities, such as completing chores, are not captured in the 2014–15 National Health Survey, which may account for a large portion of adult physical activity and therefore underestimate activity levels. Additionally, the survey did not include older people in residential aged care facilities, which may affect the estimates of physical activity participation (Holt et al. 2014; Moran 2016). Older people in residential aged care have increased barriers to participating in physical activity and also have decreased engagement or attendance in programs offered (Holt et al. 2014; Moran 2016). As a result, this could overestimate participation levels in this population group.

The results presented in this report showed that adults aged 18–64 spent an average of 1 hour and 45 minutes sitting in leisure activities, which increased to 2 hours and 35 minutes among adults aged 65 and over.

Barriers to doing physical activity come from a wide range of psychological, environmental and social factors. These include:

- shortage of time
- cost
- desire to complete other activities
- lack of enjoyment
- perception of being already physically active
- lack of facilities or infrastructure (Sequeira et al. 2011).

Indeed, the report has found a variety of barriers to participation, with *Not enough time or too many commitments* cited as the main barrier for adults aged 18–64. In older adults, *Poor health or injury* becomes a major barrier, with almost half of adults aged 65 and over reporting that as a reason for non-participation. However, encouraging participation in strength-based activities helps to improve joint mobility and stability, which can improve overall quality of life, and reduce the risk of falls (Sims et al. 2006). Physical activity can also be directly incorporated into medical management plans (Durstine et al. 2013), with greater success reported when physicians provide detailed information tailored to individuals and their circumstances (Taylor 2013).

Research has suggested that by promoting strategies to enhance effective time-management and social connectedness in populations, increased participation in physical activity could occur (Hoare et al. 2017). Additionally, promoting the importance of regular bodily movement throughout the day, as opposed to a single block session of physical activity, can aid individuals in achieving the Guidelines and offset deleterious metabolic syndrome consequences (Brown et al. 2012).

Physical activity: population groups

Key findings

By remoteness:

- For children aged 2–5 there was little association between remoteness and meeting both of the guidelines.
- Children aged 5–12 and 13–17 in regional areas were more likely to meet the physical activity guideline than their counterparts in *Major cities*.
- Adults aged 18–64 and 65 and over living in *Major cities* were more likely to meet the physical activity guideline, compared with their counterparts in *Inner regional* or *Outer regional/Remote* areas.

By socioeconomic group:

- Children aged 2–5 and 5–12 in the middle to high socioeconomic groups were more likely to meet both guidelines, compared with lower socioeconomic groups.
- Adults aged 18–64 and 65 and over in the highest socioeconomic groups were more likely to meet the physical activity guideline, compared with the lowest socioeconomic groups.

By Indigenous status:

- Similar proportions of Indigenous (64%) and non-Indigenous (69%) children aged 2–5 met the physical activity guideline.
- Indigenous children aged 5–12 and young people aged 13–17 were twice as likely to meet the physical activity guideline, compared with non-Indigenous children.
- Lower proportions of Indigenous adults aged 18–64 and 65 and over met the physical activity guideline, compared with non-Indigenous adults in these age groups.
- Among those aged 65 and over, more than twice as many non-Indigenous women (38%) met the physical activity guideline, compared with Indigenous women (16%), while the difference was not as great for Indigenous and non-Indigenous men.

Aboriginal and Torres Strait Islander people

This report has highlighted that Aboriginal and Torres Strait Islander children and young people generally completed more physical activity, when compared with non-Indigenous children and young people. However, among adults, this pattern was reversed, particularly as age increased, with non-Indigenous adults being more likely to meet the Guidelines compared with Indigenous adults in the same age group.

Increased physical activity in children can have important broader impacts, such as increased school-retention rates; improved attitudes towards learning; social and cognitive skills; as well as increased connection to culture (Ware & Meredith 2013).

Indigenous and non-Indigenous women have different social circumstances, priorities and backgrounds that can have an impact on physical activity participation (Yeats 2010). Indigenous women report barriers to participating in physical activity, such as concern for negative social stereotyping or judgement in public spaces (particularly due to ethnicity or the increased likelihood of being overweight); cost; and accessibility (Hunt et al. 2008; Seacat & Mickelson 2009). However, engagement in group and family-based activities appear to strongly motivate participation rates (Hunt et al. 2008).

Given that Indigenous individuals have a lower life expectancy and are more at risk from health disparities, it is vital that targeted interventions are implemented—for example, group- or family-based health and sport programs (AIHW 2016a; Hunt et al. 2008; Macniven et al. 2017). Additionally, providing culturally appropriate services and programs is important (National Rural Health Alliance 2011). Early intervention using a range of these programs is essential to improve participation in physical activity, and can lead to prevention of chronic disease risk and incidence (Macniven et al. 2017).

Socioeconomic groups

This analysis has also highlighted the existence of differences in physical activity participation rates due to socioeconomic inequalities, with those in the lowest socioeconomic groups generally the least likely to meet the recommended physical activity guideline.

Research has indicated that individuals in the lowest socioeconomic groups are at a higher risk of adverse health outcomes associated with decreased physical activity and increased sedentary behaviours (Ball et al. 2015). One contributor to decreased physical activity is a lack of environmental access to green spaces and active living facilities (Ball et al. 2015). Therefore, the inequalities in this population group need to be addressed through a government and whole-of-community approach, such as improving access and awareness of low-cost or free programs (Ball et al. 2015; Cleland et al. 2014).

Remoteness area

Adult populations living in *Outer regional/Remote* areas are more likely to be sedentary and participate less in physical activity, compared with those living in *Major cities*. Barriers that affect participation in these areas include lack of access to health-care professionals who can support and promote the beneficial effects of physical activity and limited transport to sporting facilities (National Rural Health Alliance 2011).

The National Rural Health Alliance (2011) has also pointed to a misconception that working in rural industries provides a sufficient amount of physical activity, and therefore participating in leisure physical activity may be perceived to be unnecessary. While many individuals living in remote areas may receive their main source of income through agricultural or more physical and labour-intensive types of employment (Hassan et al. 2015), this type of physical activity has not been captured in the surveys used in this report.

The physical activity participation of children were similar across remoteness areas. In young people, those living in *Outer regional/Remote* areas participated in more physical activity and less sedentary screen-based behaviour, compared with those living in *Major cities*. Research has shown that this population group appears to have greater opportunities to participate in increased levels of free play, due to greater space availability, lower-density environments (compared with urban environments), and lower perceived risk from traffic or strangers (Dollman et al. 2012).

Other population groups

People with health conditions or physical limitations may be unable to meet the guidelines of achieving moderate- to vigorous-intensity physical activity. However, participation in even small amounts of light exercise can produce positive benefits.

Individuals who identify as having gender or sexuality differences can face challenges in sport participation—including sexism, verbal harassment, bullying or physical assault and unsafe sporting environments (ACT Government 2014). However, many still consider sport an important part of their lifestyle and something from which they gain enjoyment and satisfaction (ACT Government 2014). Hence, promoting environments where all individuals, irrespective of their identity, are welcomed, accepted and valued is vital in achieving optimal physical activity status (ACT Government 2014).

Programs and initiatives

Engaging with business, community or government facilities and/or programs can assist individuals become more active. Adopting healthy lifestyle policies requires targeted methods appropriate for all sub-population groups and inequalities—such as gender, sociodemographic characteristics, and country-of-origin customs (Graf & Cecchini 2017). Therefore, the approach should be population-based multi-sectoral, multi-disciplinary and culturally appropriate to population groups (Devonshire-Gill 2016; WHO 2017a).

Suggested multifaceted implementations recognised by the WHO (2009) include:

- supportive community-based activities/programs in more socioeconomically disadvantaged areas. (For example, supervised programs that provide support and goal-setting or behavioural strategies, and adding necessary parks and walking areas)
- environmental interventions and policies that decrease the barriers to physical activity participation while increasing accesses to safe facilities for recreational activity
- enhancing physical activity programs—both in schools for children and within communities for older adults—as well as providing individual behavioural change strategies in the workplace
- appropriate mass-media and public health campaigns that succinctly and clearly outline the Guidelines and how individuals can proactively and effectively achieve the recommendations
- health professionals advising patients on the benefits of physical activity participation, particularly for disease-prevention or management.

In Australia, many of these ideas have been implemented, either through community-based interventions or health promotion approaches. For example:

- Girls Make Your Move campaign (Department of Health 2017b)
- Healthy Weight Guide (Department of Health 2017c)
- Healthy Workers Initiative (Department of Health 2013)
- Make Healthy Normal campaign (NSW Government 2018)
- Jump Rope for Heart, (National Heart Foundation 2018)
- Munch and Move programs (Lockeridge et al. 2015).

Data limitations

The data presented in this report come from the 2011–12 NNPAS, 2012–13 NATSINPAS and 2014–15 NHS. While these surveys are useful in obtaining characteristics of a population, limitations do exist:

- Responses are self-reported, which can introduce bias to physical activity estimates, such as over- or under-estimations of the amount of activity completed (Prince et al. 2008).
- They rely on participants remembering their physical activity levels and are therefore prone to recall bias. Consequently, errors may be introduced due to the inaccuracies or incompleteness of the recollections.
- The surveys do not capture incidental or occupational physical activity completed and therefore activity levels are likely to be under-represented.

- Methods used to approximate the survey data to the total population are relatively robust, but can be subject to errors (for example, sampling error, where an error in the estimate may arise from the unrepresentativeness of the sample taken).
- These surveys do not capture all population groups—for example, individuals in residential aged care, hospitals, prisons, *Very remote* areas and defence bases. Consequently, these population groups are unable to be reported on.
- Interpretation of survey questions may differ between individuals and, as a result, not all related activities may have been captured which could affect estimates (see Appendix A for examples of the questions asked in the surveys).

Future directions/research

This report has highlighted the importance of the Guidelines and has measured how well Australians are meeting the different aspects of the guidelines. However, there are opportunities for further research in a number of areas, which would address or overcome limitations in the current data sources available on physical activity in Australia:

- Observation of changes in population behaviours, such as physical activity participation, takes time. Therefore, trend analyses for a longer period of time (for example, 10 years or more) is necessary to ascertain the effectiveness of the Guidelines and population programs in influencing physical activity and sedentary behaviours.
- It would be valuable to conduct surveys collecting comprehensive physical activity data and sedentary behaviours for vulnerable population groups such as socioeconomically disadvantaged groups; the Lesbian, Gay, Bisexual, Transgender, Queer or Questioning and Intersex (LGBTQI) community; and those with chronic illnesses or disabilities. This could aid in fully understanding the impact of multiple factors on participation in physical activity.
- Investigating participation and variation in physical activity curricula in schools could also improve understanding of physical activity in children and young people. This could suggest strategies for better targeted funding as a way to improve children and young people's participation rates.
- Improve understanding of the effectiveness of targeted programs and government initiatives on participation rates and how these may vary by individual and population groups.

Conclusion

The Guidelines have been created with the intention of improving the health of Australians through physical activity and offsetting the negative effects of sedentary behaviours. Results from this report have highlighted the need for a more active Australian population, which can be achieved by increasing awareness of different types of physical activity and of the barriers to participation; encouragement of participation in more sporting and recreational activities; and an emphasis of the positive health effects of regular physical activity.

A multifaceted and multifactorial action plan to improve the way in which the Guidelines are met, would provide the most beneficial results across a diverse range of population groups.

Appendix A: Data Sources

ABS survey data

National Health Surveys and Australian Health Survey

The analyses presented in this report are based on data collected in the following national cross-sectional surveys conducted by the ABS:

- the 2011–12 National Nutrition and Physical Activity Survey (NNPAS), which is a component of the 2011–13 Australian Health Survey
- the 2014–15 National Health Survey.

The 2011–13 Australian Health Survey and the 2014–15 National Health Survey were based on nationally representative samples that included only residents of private dwellings, and excluded residents of non-private dwellings such as hospitals, nursing homes, hotels, motels, boarding schools, and prisons.

The sample size in each survey varied, with about:

- 32,000 people surveyed in the 2011–13 Australian Health Survey
- 19,300 people surveyed in the 2014–15 National Health Survey.

Each survey included a collection of measures of physical activity and sedentary activities, both self-reported to trained interviewers and via data provided by pedometers issued to participants. A parent or guardian answered the questions on behalf of all children aged under 15. Parental consent was obtained to interview young people aged 15–17; however, some parents preferred to answer the survey questions on their child's behalf (ABS 2013a). Only parent-reported or self-reported data are used in this report.

For each survey, the ABS allocated a person-weight to each participant, which is a value that indicates how many population units are represented by the sample unit. Estimates based on the person-weights can be used to infer results for the in-scope population.

Box A.1: Physical activity and sedentary behaviour survey questions

Survey questions can be general when referring to physical activity—which may lead to different respondent interpretations of what types of activities constitute 'physical activity'. This may lead to omissions of certain types of activities that contribute to the total amount of physical activity a person completes (for example, walking around the shops). On the other hand, some survey questions provide examples of particular activities, which can serve to prompt respondents to consider these activities when answering the question. However, these examples provided by the interviewer do not exhaustively capture all types of physical activities.

Examples of survey questions on physical activity asked of respondents include:

- What was the total amount of time [you/[first name]] spent walking for fitness, recreation or sport in the last week?
- How much time in total did [you/[first name]] spend walking to get to and from places in the last week?
- In the last week, did [you/[first name]] do any exercise which caused a large increase in [your/his/her] heart rate or breathing, that is, vigorous exercise? (For example, jogging, cycling, aerobics, competitive tennis?)
- Some activities are designed to increase muscle strength or tone, such as lifting weights, resistance training, pull-ups, push-ups, or sit-ups. Including any activities already mentioned, in the last week did [you/[first name]] do any strength or toning activities?

(continued)

Box A.1 (continued): Physical activity and sedentary behaviour survey questions

Sedentary behaviour survey questions for adults do not distinguish between the use of a computer for leisure or work purposes.

For example, a survey question on sedentary behaviour for adults aged 18 and over who were not employed full-time was:

- How much time [do you/does [first name]] spend sitting while watching television or using the computer on a usual [work/week] day?

A question on sedentary behaviour for adults aged 18 and over who were employed full-time was:

- (Excluding any time you have already mentioned), how much time in total [do you/does [first name]] usually spend sitting while watching television or using the computer before and after work?

Source: ABS 2013b, 2015b.

Data quality statement

The data quality declaration for the 2011–13 Australian Health Survey can be found at the ABS website: <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/5209F2553DE3B084CA257BBB0014D160?opendocument>>.

The data quality declaration for the 2014–15 National Health Survey, can be found at the ABS website: <<http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4363.0~2014-15~Main%20Features~Data%20quality~61>>.

Australian Aboriginal and Torres Strait Islander Health Survey

The Indigenous population estimates presented in this report are based on data collected in the ABS 2012–13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS), which is conducted as part of the Australian Health Survey. The AATSIHS combines the existing National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) with 2 new components—the National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey (NATSINPAS) and the National Aboriginal and Torres Strait Islander Health Measures Survey (NATSIHMS) (ABS 2013b).

The main survey used for this population in this report is the 2012–13 NATSINPAS, which collected information on Aboriginal and Torres Strait Islander participation in physical activity.

The 2012–13 NATSINPAS was conducted in over 2,800 private dwellings selected in remote and non-remote areas throughout Australia, including discrete communities. For physical activity-related measurements, data was collected for children aged 2–4 living in non-remote areas and for respondents aged 5 and over living in both non-remote and remote areas. The 2012–13 NATSINPAS is directly comparable with the 2011–12 NNPAS; however, it is not directly comparable to the 2014–15 NHS (ABS 2013b).

As with the 2011–12 NNPAS, information on physical activity and sedentary behaviour was obtained through self-reported questionnaires conducted via face-to-face interviews with trained ABS interviewers; pedometers were also used to collect information. A parent or guardian answered the questions on behalf of all children aged under 15. Parental consent was obtained to interview persons aged 15–17, however, some parents preferred to answer survey questions on their child's behalf (ABS 2013b). Only parent-reported and self-reported data are used in this report.

Data quality statement

The data quality declaration for the 2011–12 National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey, can be found at the ABS website: <<http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/43D508D42925E335CA257C2F00146470?opendocument>>.

AusPlay

AusPlay is a national population-tracking survey funded by the Australian Sports Commission (ASC) and was designed to address gaps in national sport and physical recreation data, following the ABS decision in 2014 to cease data collection (Analysis and Policy Observatory 2016).

Market research company ORC International was engaged to conduct the survey, which is conducted by computer-assisted telephone interviewing (CATI). All Australian residents are in scope for the survey, which uses an overlapping dual-frame design including 2 equal sample sources: a random sample of mobile phone numbers and a random sample of landline phone numbers. Under the overlapping dual-frame design used for AusPlay, people with both a landline and a mobile phone (dual phone population) are able to be selected from either sample source. This leads to the over-representation of the dual phone population and potential bias in survey estimates. Special weighting techniques are used in AusPlay to address this issue.

The annual target sample size for AusPlay is 20,000 adults aged 15 and over and approximately 3,600 children aged 0–14, spread evenly across the year, with approximately 5,000 adult interviews conducted each quarter.

For the landline sample, a person aged 15 or over is randomly selected for an AusPlay interview. For the mobile phone sample, the respondent is the mobile phone owner. For either sample, a random child is selected for a child interview, using the 'last birthday' method if there are 2 or more children aged 0–14 in the household and if the respondent is a parent or guardian of those children.

The response rate for the 2017 collection was slightly better for the mobile phone sample (28%) than it was for the landline phone sample (23%).

The AusPlay landline sample is stratified into 13 geographic levels based on states and territories, with further splits of the larger states into greater capital city statistical area and the rest of the state. AusPlay data are weighted quarterly using a complex weighting method (Hughes 2017).

AusPlay collects data on participation behaviours; use of technology (adults only); barriers; involvement in non-playing roles (adults only); demographics; and motivators (adults only). Data are collected for almost 400 different activities that are self-nominated by survey respondents. These activities are then collated into a smaller number of output activities for reporting purposes.

The original objectives for AusPlay did not include measurement of the Department of Health Physical Activity and Sedentary Behaviour Guidelines and the questionnaire was not designed for this purpose.

For more information on the AusPlay Survey, visit

<<https://www.clearinghouseforsport.gov.au/research/smi/ausplay/method>>.

Appendix B: Defining population groups

Socioeconomic groups

Socioeconomic groups can be defined using the Index of Relative Socio-economic Disadvantage (IRSD). The IRSD scores each area by summarising attributes of their populations, such as low income; low educational attainment; high unemployment; and jobs in relatively unskilled occupations. Areas can then be ranked by their IRSD scores, and are classified into groups based on their rank. Areas used in this report were calculated from ABS Statistical Area Level 1 (ABS 2011).

Any number of groups may be used—5 is common, and if 5 are used, then the IRSD commonly describes the population living in the 20% of areas with the greatest overall level of disadvantage as ‘living in the lowest socioeconomic group’. The 20% at the other end of the scale—the top fifth—is described as ‘living in the highest socioeconomic areas’ or the ‘highest socioeconomic group’ (ABS 2013c).

Indigenous status

‘Indigenous status’ is a measure of whether a person identifies as being of Aboriginal or Torres Strait Islander origin (AIHW 2017b). This is in accord with the first 2 of 3 components of the Australian Government definition (AIHW 2017b).

The standard term for this variable is ‘Indigenous status.’ ‘Indigenous status’ is an acceptable term for use in data collection only, and only in terms of identifying a characteristic of a person (ABS 2014). A person’s Indigenous status is determined by their response to the ABS standard Indigenous question: ‘Are you of Aboriginal or Torres Strait Islander origin?’ for which categories are (ABS 2014):

- *No*
- *Yes, Aboriginal*
- *Yes, Torres Strait Islander*

This question also allows respondents to report that they are both ‘Aboriginal’ and ‘Torres Strait Islander’ if that is how they identify (ABS 2014).

Remoteness areas

The Australian Statistical Geography Standard-Remoteness Area (ASGS-RA) is a geographical classification which defines locations in terms of remoteness (AIHW 2013).

Geographic remoteness is essentially a measure of a physical location’s level of access to goods and services (ABS 2013, 2017a). Large population centres tend to have a greater range of goods and services available than small centres (AIHW 2013). Typically, a population centre is not likely to provide a full range of goods and services until its population reaches around 250,000 people (AIHW 2013).

The measures of remoteness used by the ABS are based on population estimates obtained from the Census of Population and Housing, conducted every 5 years (AIHW 2013). Remoteness measures are calculated using Accessibility/Remoteness Index of Australia (ARIA+) scores, which are based on the distance of geographic locations from the nearest population centre in various size ranges. The lower the ARIA+ score for a location, the better its level of access to goods and services (AIHW 2013).

Within this report, 3 ASGS-RAs have been reported against, including *Major cities, Inner regional* and *Outer regional/Remote* areas (due to small population sizes the latter 2 have been combined).

Appendix C: Methods

Proportion estimates

Physical activity participation and sedentary behaviours across the life stages are expressed as the proportion meeting the Guidelines. This proportion is defined as the number of people meeting a guideline for their age group, divided by the number of people in that age group, multiplied by 100.

In calculating proportion estimates, those people for which the information of interest (for example, whether or not the physical activity guidelines were met) was either not available (for example, 'not known') or not applicable, were excluded from the denominator.

All proportion estimates in this report are weighted estimates, as allocated to each survey participant by the ABS to allow for national representativeness.

Proportion estimates for 5 year old children

Children aged 5 are included in 2 age groups:

- 2–5 age group
- 5–12 age group.

In calculating the proportion estimates for children aged 2–5 and 5–12, the 5 year olds are assessed against the guidelines respective to the age group they are in. For example, 5 year olds in the 2–5 year age group were considered to have met the physical activity guidelines if they did at least 180 minutes of physical activity on all 7 days; and, 5 year olds in the 5–12 year age group were considered to have met the physical activity guidelines if they did at least 60 minutes of physical activity on all 7 days.

Average time estimates

The amount of time spent on physical activities and sedentary behaviours is expressed as the average time spent on the activity, per person per day, in hours and minutes. The average amount of time is defined as the total minutes of time spent on the activity in the population of interest, divided by the population of interest, divided by 7 (for conversion to days, if applicable), divided by 60 (for conversion to hours, if applicable).

In calculating the average time estimates, those people for whom the information of interest was not available or not applicable were excluded from the population of interest.

All average time estimates in this report are weighted estimates, as allocated to each survey participant by the ABS to allow for national representativeness.

Age-standardised estimates

This report uses the method of direct age-standardisation. A directly age-standardised rate is defined as the weighted average of event rates, with the weights being equal to the proportion of people in each group in a chosen standard population. The chosen standard population used is the estimated resident population in Australia on 30 June 2001.

The direct age-standardised rate (ASR) for the study population of interest, or the populations being compared is obtained using the following formula:

$$ASR = \frac{\sum N_i r_i}{\sum N_i}$$

where N_i is the standard population sizes for each age group and r_i is the event rate for each age group.

Standard error, relative standard error and confidence intervals

For all ABS survey data, the 'jack-knife weight replication' method was used to derive the standard errors for each number estimate, using replicate weights provided by the ABS.

Once the standard error for the number estimates was produced, the standard error for the proportion was derived as follows:

$$SE\left(\frac{X}{Y}\right) = RSE\left(\frac{X}{Y}\right) \times \left(\frac{X}{Y}\right)$$

where $RSE\left(\frac{X}{Y}\right)$ is calculated as shown in the next formula.

The relative standard error of an estimate is a measure of the percentage errors likely to have occurred due to sampling. The relative standard error of an estimate is calculated as follows:

$$RSE(X) = \frac{SE}{estimate} \times 100$$

Average times with a relative standard error greater than 50% are considered too unreliable to use. These cases have been marked with a '#' in the supplementary data for this report. Estimates with a relative standard error between 25% and 50% should be used with caution. These cases have been marked with an asterisks (*) in the supplementary data for this report.

The 95% margin of error is a measure of the percentage points the estimates differs from the real population value. The 95% margin of error of an estimate is calculated as follows:

$$MOE = 1.96 * SE$$

Proportion estimates with a 95% margin of error greater than 10% should be used with caution. These cases have been marked with a double asterisks (**) in the supplementary data for this report.

The 95% confidence interval around the proportion estimates (P) was derived as follows:

$$LCL = P - 1.96 \times SE\left(\frac{X}{Y}\right)$$

where:

$$UCL = P + 1.96 \times SE\left(\frac{X}{Y}\right)$$

LCL = lower confidence limit

UCL = upper confidence limit.

For AusPlay Survey data, the standard errors of the estimates were calculated by interpolating the standard errors provided in tables of standard errors available in the published methodology report (Hughes 2017).

Significance testing

Variation or difference in observed values or rates may reflect only a random variation or difference. To assess whether differences between estimates are statistically significant—that is, that they are not due to chance alone—95% confidence intervals around the rates were used.

z-score

A difference between rates or values was considered statistically significant when the confidence intervals around the values or rates did not overlap.

Where there was a small overlap between confidence intervals, a z-score for the difference in observed proportions was calculated using the following formula:

$$z = \frac{\text{proportion 1} - \text{proportion 2}}{\sqrt{SE(\text{proportion 1})^2 + SE(\text{proportion 2})^2}}$$

If $-1.96 < z < 1.96$, the difference was not considered statistically significant at the 95% confidence level.

If $z \leq -1.96$ or $z \geq 1.96$, the difference was considered statistically significant at the 95% confidence level.

Confidence interval of difference between 2 means

A difference between means was considered statistically significant when the 95% confidence intervals around the means did not overlap.

Where there was a small overlap between the confidence intervals of the 2 means, a confidence interval for the difference between the 2 means was calculated to determine whether the difference in means was significant or not. The confidence interval of the difference between the 2 means was calculated using the following steps:

Step 1:

Calculate the standard error of the difference between the 2 means using the formula:

$$SE(\text{mean 1} - \text{mean 2}) = \sqrt{SE(\text{mean 1})^2 + SE(\text{mean 2})^2}$$

Step 2:

Determine the critical value using the degrees of freedom, which was calculated using the following formula:

$$df = N + M - 2$$

where:

df is the degrees of freedom

N is the unweighted sample size of the first group

M is the unweighted sample size of the second group.

If degrees of freedom ≥ 500 , then the t-value is 1.96.

If the degrees of freedom < 500 , the t-value that corresponded to a left tail probability of 97.5% was obtained from the t-distribution with n degrees of freedom.

Step 3:

The margin of error is calculated using the formula:

$$MOE = \text{critical value} * SE(\text{mean 1} - \text{mean 2})$$

Step 4:

The lower bound (LCI) and upper bound (UCI) of the confidence interval of the difference between the 2 means is calculated using the formula:

$$LCI = (\text{Mean 1} - \text{Mean 2}) - MOE$$

$$UCI = (\text{Mean 1} - \text{Mean 2}) + MOE$$

If the confidence interval of the difference between the 2 means includes 0, the difference is not considered statistically significant.

If the confidence interval of the difference between the 2 means does not include 0, the difference is considered statistically significant.

Glossary

Aboriginal or Torres Strait Islander: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander.

accelerometer: Device that can be attached to an individual's waist as a way to measure or monitor the intensity of physical activity.

acute condition: Distinct symptoms that present, change or deteriorate rapidly and last for a short period of time (for example, a heart attack).

aerobic activity: Continuous movement involving large muscle groups that is sustained for a minimum of 10 minutes. (For example, walking, cycling, swimming and dancing.)

all-cause mortality: An estimate of the number of individuals in a population who died from any cause or condition (for example tobacco smoking, diabetes or cardiovascular disease) within a specified period. This estimate is used as an indicator of the safety or hazard of an intervention method.

Australian Dietary Guidelines: Guidelines providing information on the types and amounts of foods, food groups and dietary patterns that can promote health and wellbeing, reduce the risk of diet-related conditions, and reduce the risk of chronic disease.

blood pressure: The force exerted by the blood on the walls of the arteries as it is pumped around the body by the heart. (For example, for a reading of 134/70 mmHg, the upper number is the systolic pressure—the maximum force against the arteries as the heart muscle contracts to pump the blood out—while the lower number is the diastolic pressure, or minimum force against the arteries as the heart relaxes and fills again with blood). Levels of blood pressure can vary greatly from person to person, and from moment to moment in the same person. See also **high blood pressure/hypertension**.

bone density: A measure of the amount of minerals, such as calcium and phosphorous, contained in the volume of bone, which is used to diagnose **osteoporosis**.

burden of disease: The quantified impact of a disease or injury on an individual or population, using the disability-adjusted life year (DALY) measure.

cardiovascular disease: Any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular). Includes heart attack, angina, stroke and peripheral vascular disease. (Also known as circulatory disease.)

chronic condition: A condition with symptoms ranging from mild to severe that persist or develop, and can deteriorate over a long period of time (for example diabetes mellitus and arthritis).

depression: A mood disorder with prolonged feelings of being sad, hopeless, low and inadequate, with a loss of interest or pleasure in activities and often with suicidal thoughts or self-blame.

diabetes mellitus: A chronic condition, characterised by high blood levels of glucose. It is caused by deficient production of insulin (the hormone that helps to metabolise glucose) or resistance to its action. There are 2 main types of diabetes, including **type 1 diabetes** where there is a complete deficiency of insulin, and **type 2 diabetes** which is marked by a relative insufficiency of insulin or resistance to its action.

high blood pressure/hypertension: The definition of high blood pressure (also known as hypertension) can vary but a well-accepted one is from the World Health Organization: a systolic blood pressure of 140 mmHg or more or a diastolic blood pressure of 90 mmHg or more, or [the person is] receiving medication for high blood pressure. See also **blood pressure**.

high cholesterol: Characterised by excessive blood readings of cholesterol (above 5.5 mmol per litre; total levels should be below 4 mmol per litre) that can build up as fatty deposits in the arteries and increase the risk of heart disease.

incidental physical activity: Unstructured activity taken during the day, such as walking for transport, housework and the performance of activities of daily living.

metabolic syndrome: A collection of risk factors (such as obesity, hypertension and high cholesterol or blood sugar levels) that can occur together and subsequently elevate the risk of developing heart disease, diabetes or stroke.

moderate level physical activity: Physical activity at a level that causes the heart to beat faster, accompanied by some shortness of breath, but during which a person can still talk comfortably.

non-organised sport: Activities not organised by a club or recreation association (for example, running or walking).

obesity: Marked degree of overweight, defined for population studies as a body mass index (BMI) of 30 or over. See also **overweight**.

organised sport: Activities organised by a club or recreation association such as a sporting body, social club, church group or gym.

osteoarthritis: A degenerative chronic condition in which the cartilage between bones breaks down or wears away, causing the bones to rub together, and creating swelling, pain and limited joint movement.

osteoporosis: A condition in which bones become brittle and weak if minerals (such as calcium) are lost more rapidly than can be replaced by the body. This decreases the **bone density** and increases the risk of bone breaks.

overweight: For the purpose of population studies, defined as a body mass index of 25 or over. See also **obesity**.

risk factor: Any factor that causes or increases the likelihood of a health disorder or unwanted condition or event.

sarcopenia: Age-related loss of skeletal muscle mass and function, which can affect an individual's ability to perform everyday tasks, and their balance and gait.

sedentary activities: Activities involve sitting or lying down and requiring very little energy expenditure. Sedentary activities can occur at work (for example, sitting at a desk), in the home (for example, watching television, reading, or playing video games) and during transport (for example, sitting in the car or on the bus).

screen-based activities: Sedentary behaviours that involve the use of electronic media, such as watching television, playing video games, or using a computer.

skeletal muscles: The most common type of muscle in the body, skeletal muscles are attached to bones by tendons, produce the movement of all body parts in relation to each other and can be voluntarily controlled.

strength (resistance) training: Activities that are focused on improving the power, strength and size of skeletal muscles. Body-weight resistance training involves exercises such as push-ups and pull-ups. Machine and free weights (for example, dumbbells) can also be used for resistance in strength training.

structured play: Generally directed by an adult and primarily learning-driven, structured play contributes to a child learning a new skill, basic motor development and enjoyment of movement (for example completing puzzles, craft activities or board games).

unstructured play: Creative free play not directed by an adult; activities are instead created by the child (for example playing in a playground, or painting on a blank piece of paper).

vigorous physical activity: Physical activity at a level that causes the heart to beat a lot faster and shortness of breath that makes talking difficult between deep breaths.

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This report presents information on the physical activity participation rates and sedentary behaviours of Australians across the life stages, reported against Australia's Physical Activity and Sedentary Behaviour Guidelines. According to the most recent available data, 30% of children aged 2–17 and 44% of adults aged 18 and over met the physical activity guidelines. Most children exceeded the recommended amount of sedentary screen-based activity time, while the amount of time spent sitting at leisure increased in adults as age increased.

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