Research Brief:

Physical Activity in Australian Secondary School Students

The National Secondary Students' Diet and Activity (NaSSDA) survey is an important initiative of Cancer Council Australia that provides regular monitoring of young people's beliefs and behaviours surrounding diet and physical activity, as well as their experience of food marketing, to inform obesity prevention policy development and evaluate implemented strategies. This research brief summarises physical activity among Australian secondary school students and changes over time. It also explores differences by sex in perceptions of barriers to and facilitators of physical activity.

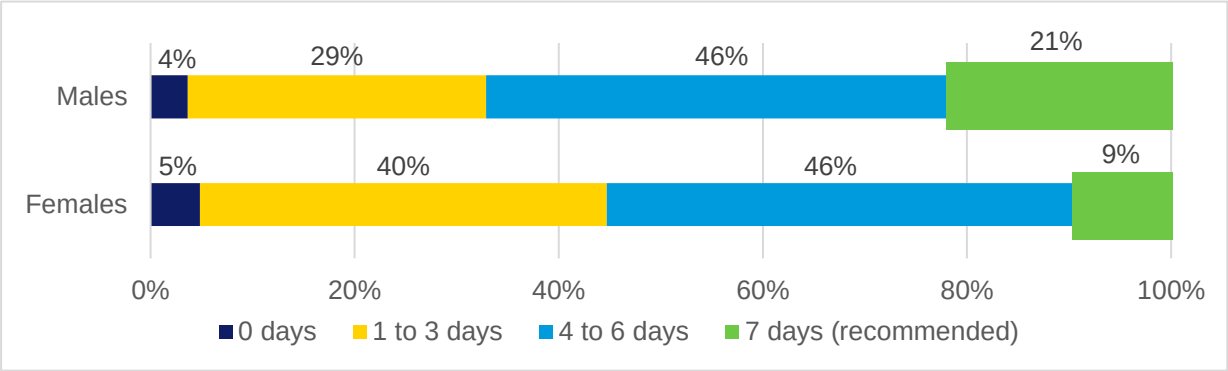
Nationally representative samples of Australian secondary school students in year levels 8 to 11 (ages 12 to 17 years) were surveyed in 2009-10 (n=13,790 from 238 schools), 2012-13 (n=10,309 from 196 schools) and 2018 (n=9,102 from 104 schools) using a self-report web-based questionnaire. Survey questions and statistical methods are described in the appendices.

Results

Current Physical Activity Levels

In 2018, 16% of Australian secondary school students reported meeting the recommended 60 minutes of physical activity on all seven days over the last week. Forty-six percent of all students were active for at least 60 minutes on four to six days in the past week, while 34% were sufficiently active on one to three days in the past week. Four percent of all students were not active for at least 60 minutes on any of the previous seven days.

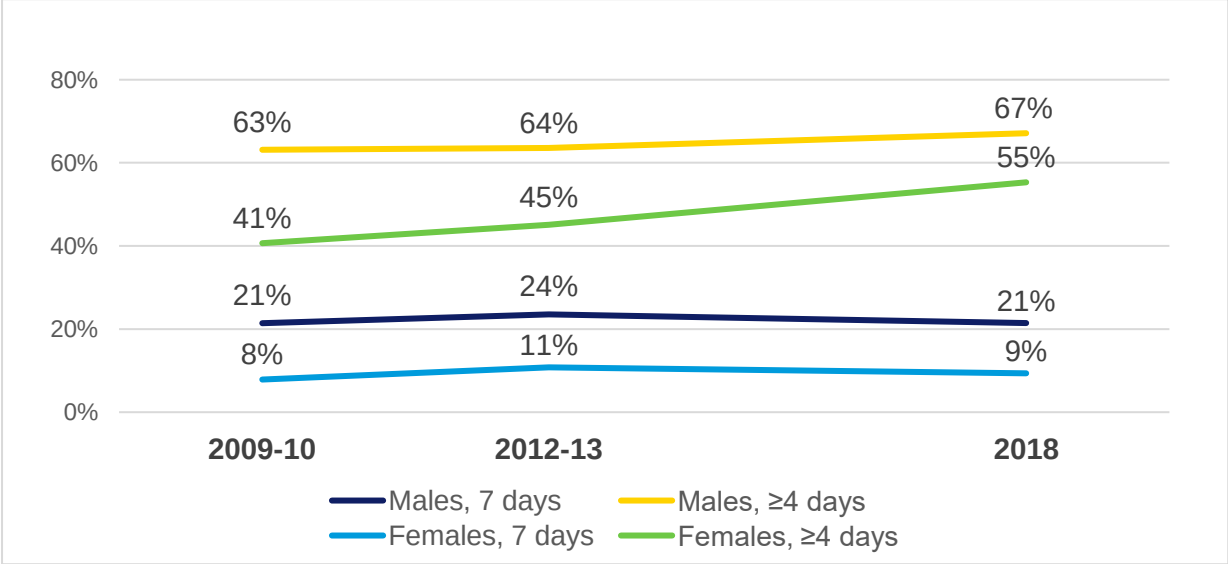
Males were significantly more likely to be meeting the recommended level of physical activity compared to females. There was no difference in adherence to physical activity recommendations by socio-economic area, year level or home location (metropolitan cf. regional/remote).



Number of days physically active for ≥60 minutes in the past week by sex in 2018.

Trends in Physical Activity Levels

The proportion of students meeting physical activity recommendations in 2018 (16%) was comparable to 2009-10 (15%) and 2012-13 (17%), with this pattern consistent across sex. However, there has been evidence of improvement in physical activity levels when using a lower threshold (i.e. at least 60 minutes on ≥4 days in past week). Specifically, a significantly greater proportion of students reported being sufficiently active for at least four days in the past week in 2018 (61%) compared to 2009-10 (52%) and 2012-13 (55%). While the observed increase between 2009-10 and 2018 was significant among both sexes, only females recorded a significant improvement between 2012-13 and 2018.



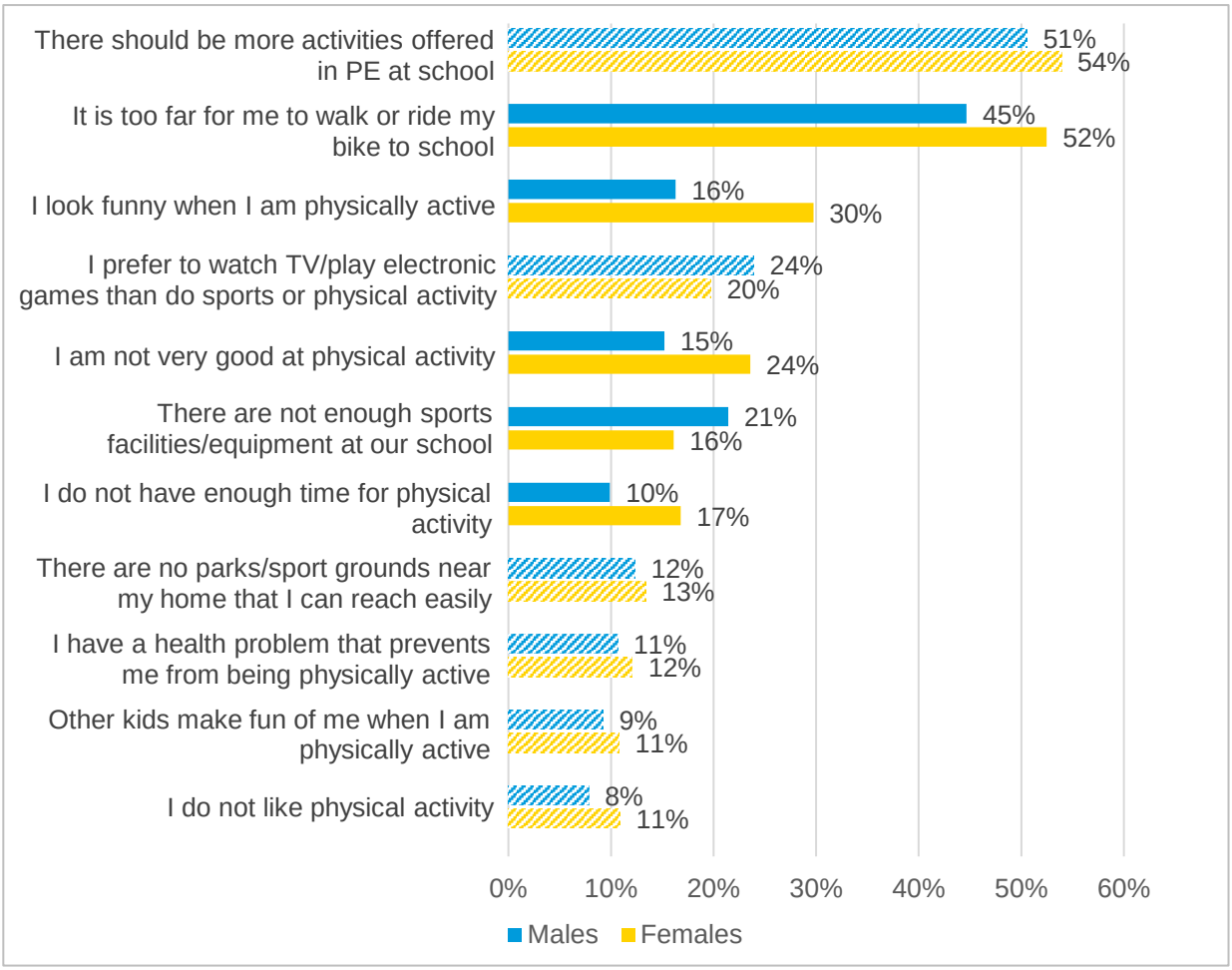
Proportion of students physically active for 60 minutes on four or more days in the past week by sex over time.

Physical Activity Barriers and Facilitators

Assessment of potential barriers to and facilitators of students engaging in physical activity can provide insight into why female adolescents may fall behind their male counterparts in meeting physical activity recommendations and help optimise future intervention strategies.

Barriers

Females were significantly more likely than males to agree that it is too far to walk or ride their bike to school, they look funny when they are physically active, they are not very good at physical activity and they do not have enough time for physical activity. On the other hand, males were significantly more likely than females to agree that there are not enough sports facilities/equipment at their school.

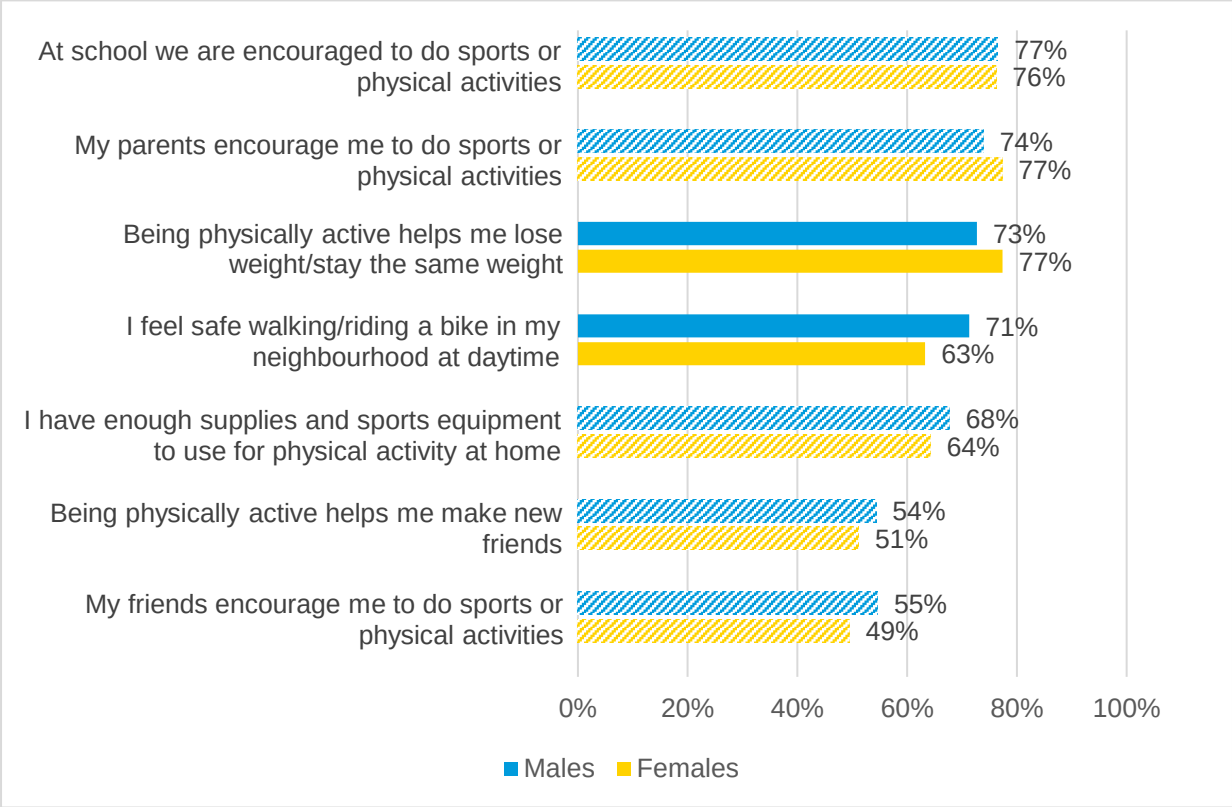


Proportion of students reporting barriers to physical activity by sex in 2018.

Note: Filled bars denote significant difference between males and females at $p<0.01$.

Facilitators

Females were significantly more likely than males to agree that being physically active helps them lose weight or stay the same weight, while males were significantly more likely than females to agree that they feel safe walking or riding a bike in their neighbourhood during the day.



Proportion of students reporting facilitators of physical activity by sex in 2018.

Note: Filled bars denote significant difference between males and females at p<0.01.

Summary

- While the majority of Australian secondary school students are active, only 16% reported meeting the recommended levels of physical activity over the past week.
- Females were significantly less likely than males to be meeting physical activity recommendations (9% cf. 21%)
- There has been no change in the overall proportion of secondary school students meeting physical activity recommendations over the past decade.
- However, there have been significant improvements since 2009-10 in the proportion of students who are sufficiently active on at least four days in the past week, with this trend most pronounced among females.
- Females were significantly more likely than males to report individual barriers to physical activity such as a lack of time and ability and concerns about how they look when physically active.
- Both parents and schools are important facilitators of physical activity, while weight maintenance/loss is a strong individual motivator, particularly for female students.

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Appendices

Methods

Questionnaire

Level of physical activity was assessed by asking students "Over the past seven days, on how many days were you physically active for a total of 60 minutes or more per day?". Students who indicated they were physically active for a total of 60 minutes or more for seven days of the week were classified as meeting physical activity recommendations[1].

Perceived barriers to and facilitators of physical activity engagement were assessed by asking students to indicate the extent to which they agreed or disagreed with a series of 18 statements. Responses were recorded on a 5-point scale ranging from 'strongly disagree' to 'strongly agree' and dichotomised to identify students who agreed ('strongly agree' or 'agree') with each statement.

Students recorded their sex, year level and residential postcode. A measure of socio-economic area was determined according to the Socio-Economic Index for Areas (SEIFA) Index of Relative Socio-economic Disadvantage based on student's residential postcode[2, 3, 4]. Using the national deciles to create quintiles, students were categorised into low (first and second quintiles), mid (third and fourth quintiles) and high (fifth quintile) socio-economic area groups. Postcode of residence was also used to classify the home location of students as metropolitan or regional/remote according to the Australian Statistical Geography Standard Remoteness Structure[5, 6].

[1] Department of Health. *Australian 24-Hour Movement Guidelines for Children and Young People (5-17 years): An integration of physical activity, sedentary behaviour, and sleep*. Commonwealth of Australia: Canberra, Australia, 2019.
[2] Australian Bureau of Statistics. *2033.0.55.001 - Census of population and housing: Socio-Economic Indexes for Areas (SEIFA)*. Australian Bureau of Statistics: Canberra, Australia, 2008.
[3] Australian Bureau of Statistics. *2033.0.55.001 - Census of population and housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011*. Australian Bureau of Statistics: Canberra, Australia, 2013.
[4] Australian Bureau of Statistics. *2033.0.55.001 - Census of population and housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016*. Australian Bureau of Statistics: Canberra, Australia, 2018.
[5] Australian Bureau of Statistics. *1270.0.55.005 - Australian Statistical Geography Standard (ASGS): Volume 5 – Remoteness Structure*. Australian Bureau of Statistics: Canberra, Australia, 2013.
[6] Australian Bureau of Statistics. *1270.0.55.005 - Australian Statistical Geography Standard (ASGS): Volume 5 – Remoteness structure, July 2016*. Australian Bureau of Statistics: Canberra, Australia, 2018.

Data Analyses

Data were analysed using Stata/MP 16.0 and weighted by state, education sector, year level and sex to bring each sample in line with the population of students enrolled in Australia[7, 8, 9]. The clustering of students within each school was also adjusted for in all analyses. Logistic regression analyses were conducted to test for significant differences in current national prevalence estimates of students meeting physical activity recommendations by sex, socio-economic area, year level and home location. Changes in national prevalence estimates across survey rounds (2018 cf. 2012-13 and 2009-10) were also assessed using logistic regression. An interaction term was added to these models to determine whether the rate of change varied by sex. Separate logistic regression models were also run to examine differences in students' perceptions of barriers to and facilitators of physical activity by sex.

A significance level of $p<0.20$ was accepted for interaction tests[10]. A conservative significance level of $p<0.01$ was employed for all other analyses. All models controlled for sex, year level, socio-economic area, home location and education sector.

Supplementary Tables

[7] Australian Bureau of Statistics. *4221.0 - Schools, Australia, 2009*. Australian Bureau of Statistics: Canberra, Australia, 2010.
[8] Australian Bureau of Statistics. *4221.0 - Schools, Australia, 2013*. Australian Bureau of Statistics: Canberra, Australia, 2014.
[9] Australian Bureau of Statistics. *4221.0 - Schools, Australia, 2018*. Australian Bureau of Statistics: Canberra, Australia, 2019.
[10] Kirkwood B, Sterne J. Essential medical statistics. (2nd edn). Malden, Massachusetts: Blackwell Science, 2003.

Table 1. Trends in physical activity by sex.

	≥ 4 days sufficient physical activity (%)			2018 (ref 2009-10)			2018 (ref 2012-13)			
	2009-10	2012-13	2018	Adj OR.†	95% CI	*p*-value	Adj OR.†	95% CI	*p*-value	Interaction test *p*-value‡
Sex										**<0.001**
Males	63.1	63.6	67.1	**1.20**	**1.05-1.37**	**0.008**	1.16	1.01-1.33	0.034	
Females	40.7	45.1	55.3	**1.82**	**1.56-2.13**	**<0.001**	**1.51**	**1.28-1.78**	**<0.001**	

Note: Unadjusted prevalence estimates are reported. Bold values denote statistical significance at p<0.01 for logistic regressions and p<0.20 for interaction tests.
†Odds ratios adjusted for year level, socio-economic area, home location and education sector.
‡Survey wave x Sex.

Table 2. Weighted proportions of students who reported barriers to physical activity by sex in 2018.

	Prevalence (%)				
	Males^	Females	Adj. OR†	95% CI	p-value
There should be more activities offered in physical education at school	50.6	53.9	1.17	1.03-1.32	0.013
It is too far for me to walk or ride my bike to school	44.7	52.5	**1.38**	**1.17-1.63**	**<0.001**
I look funny when I am physically active	16.3	29.7	**2.15**	**1.85-2.50**	**<0.001**
I prefer to watch TV/play electronic games than do sports or physical activity	24.0	19.8	0.78	0.63-0.97	0.024
I am not very good at physical activity	15.2	23.6	**1.71**	**1.44-2.02**	**<0.001**
There are not enough sports facilities/equipment at our school	21.4	16.1	**0.71**	**0.58-0.87**	**0.001**
I do not have enough time for physical activity	9.9	16.8	**1.83**	**1.35-2.49**	**<0.001**
There are no parks/sport grounds near my home that I can reach easily	12.4	13.4	1.01	0.81-1.26	0.929
I have a health problem that prevents me from being physically active	10.7	12.1	1.15	0.96-1.37	0.126
Other kids make fun of me when I am physically active	9.2	10.8	1.17	0.92-1.49	0.186
I do not like physical activity	7.9	10.9	1.45	1.10-1.92	0.010

Note: Unadjusted prevalence estimates are reported. Bold values denote statistical significance at p<0.01.
^Reference category in logistic regression models.
†Odds ratios adjusted for year level, socio-economic area, home location and education sector.

Table 3. Weighted proportions of students who reported facilitators of physical activity by sex in 2018.

	Prevalence (%)				
	Males[^]	Females	Adj. OR[†]	95% CI	*p*-value
At school we are encouraged to do sports or physical activities	76.6	76.2	0.96	0.77-1.21	0.737
My parents encourage me to do sports or physical activities	73.9	77.3	1.23	1.04-1.44	0.013
Being physically active helps me to lose weight or stay the same weight	72.7	77.4	**1.28**	**1.10-1.50**	**0.002**
I feel safe walking/riding a bike in my neighbourhood at daytime	71.3	63.3	**0.70**	**0.60-0.80**	**<0.001**
I have enough supplies and sports equipment to use for physical activity at home	67.7	64.3	0.87	0.78-0.97	0.016
Being physically active helps me to make new friends	54.4	51.2	0.88	0.74-1.04	0.122
My friends encourage me to do sports or physical activities	54.7	49.5	0.80	0.67-0.95	0.012

Note: Unadjusted prevalence estimates are reported. Bold values denote statistical significance at p<0.01.
[^]Reference category in logistic regression models.
[†]Odds ratios adjusted for year level, socio-economic area, home location and education sector.