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Acknowledgments

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Foreword

The proportion of Australian children who are overweight has doubled in the past 25 years and the proportion of children who are obese has increased fourfold. Unhealthy weight gain in children and young people is a major public health concern. It has significant social and economic implications and unfortunately tends to track into adulthood, raising the risk of developing chronic diseases such as type 2 diabetes, cardiovascular disease and fatty liver disease in later life.

Lifestyle changes underlying the rapid increase in the prevalence of overweight and obesity have been the focus of public scrutiny in recent years, with the current social environment making it more likely that people will eat more and exercise less.

The 'obesogenic environment' as it is known, encompasses key behaviours including insufficient physical activity, sedentary habits, dietary and transport patterns that all contribute to overweight and obesity. All of these factors can be influenced and modified, however, it is critically important to monitor such behaviours and trends in order to guide policies and interventions to promote healthy weight and lifestyles among children and young people.

The NSW Schools Physical Activity and Nutrition Survey (SPANS) 2010 is the fourth in a series of school based surveys of NSW school students. It provides important information on the current weight status and associated weight related behaviours of a representative sample of children and adolescents.

More than 8,000 school-aged children from 101 schools in NSW participated in the survey, conducted in Term 1, 2010. The data collected provides an update on previous surveys conducted in 1985, 1997 and 2004, reporting on the trajectories of overweight and obesity and levels of physical activity.

This report provides the NSW Government with the information needed for it to develop health promotion policies and programs to address overweight and obesity among NSW children and young people.

Yours sincerely

HON. KEVIN HUMPHRIES MP
Minister for Mental Health
Minister for Healthy Lifestyles
Minister for Western New South Wales

Executive summary

The NSW Schools Physical Activity and Nutrition Survey 2010 (SPANS 2010) provides current data and trends in food consumption and behaviours, physical activity, fitness levels, fundamental movement skill proficiency, sedentary behaviours, modes of travel to and from school and levels of overweight and obesity among children and young people in NSW.

SPANS 2010 reports on a representative sample of school students in NSW – 8,058 children in Years K, 2, 4, 6, 8 and 10 – from a total of 101 government, Catholic and independent schools in urban and rural areas.

Weight status

Overall, the results suggest that the prevalence of overweight and obesity has stabilised since 2004, at 22.8%, in contrast to the rising trend observed in previous surveys. In 2010, 69.9% of students had a Body Mass Index in the healthy range, while 7.3% of students were underweight, 17.1% were overweight and 5.8% were obese.

The proportion of overweight and obese children was highest in Year 6 boys and Year 4 girls, declining in older age groups. There were sociodemographic disparities, with the prevalence of overweight and obesity being higher among children from lower socioeconomic status backgrounds and from Middle-Eastern cultural backgrounds.

Food consumption and behaviours

While primary students ate enough fruit, fewer than half of the secondary students did so. Consumption of vegetables was insufficient across all age groups, with only one-fifth of students in Years 8 and 10 eating the recommended daily amount.

Students ate confectionery or other energy-dense, nutrient-poor foods too often, especially fried potato products, and many drank too much soft drink. Those who drank milk tended to drink whole milk, rather than low fat milk as recommended.

Many adolescent girls skipped breakfast, and using food as a reward for good behaviour was prevalent among parents of young children.

Physical activity

There was a significant decline in the proportion of Years 6, 8 and 10 students meeting the recommendations for children and young people in The National Physical Activity Guidelines for Australians between 2004 and 2010, with the exception of Year 10 girls. Fewer than half (46.5%) of the students in Years K, 2 and 4 met the national recommendation of at least one hour of moderate-to-vigorous physical activity each day, as did fewer than two thirds (62.7%) of students in Years 6, 8 and 10.

Overall, boys were significantly more active than girls and students from higher socioeconomic status backgrounds were more active than those from middle and low socioeconomic status backgrounds. Students from Asian cultural backgrounds and girls from Middle-Eastern cultural backgrounds were significantly less active than students from English-speaking backgrounds.

School travel

Among students in Years K and 2, over half were driven to or from school by car and only about one fifth used active travel (such as walking or cycling) or mixed modes of transport to get to or from school. Year 6 students had higher rates of active travel and, in general, fewer older students travelled to school by car.

Fundamental movement skills

Students' proficiency at fundamental movement skills like catching, throwing, running and jumping showed improvements in some skills and declines in others since 2004. Overweight and obese students demonstrated lower levels of proficiency in locomotor skills than their healthy weight peers.

Cardiorespiratory fitness

Although two thirds of children in Years 4, 6, 8 and 10 were classified as adequately fit, a large proportion of children were not fit. From 2004 to 2010 there was a significant improvement in fitness among boys, but a slight decline among Year 8 girls.

Sedentary behaviours

Time spent watching television, playing computer games and in other sedentary recreation activities adds to the risk of overweight and obesity in young people. Students in Years 6, 8 and 10 spent four to six hours per day in sedentary activities on a usual week day outside of school hours and 5.5 to nine hours per day on weekend days. Younger students and those from rural areas were generally less sedentary. More than half (53.7%) of primary school students exceeded the recommended screen time of less than two hours per day, and almost three quarters (74.5%) of high school students exceeded the screen time guideline.

School environment

About 70% of primary schools and more than 90% of secondary schools allocated two hours or more per week for sport and physical education.

Most primary and secondary schools have a wide range of facilities that can be used for physical activity. There is little difference between urban and rural schools, and compared to earlier data, the usage trends were generally positive. However, more use of facilities outside of school hours could be encouraged.

Conclusions

While levels of overweight and obesity in NSW school children has not followed the upward trend observed prior to 2004, the issue is still a serious public health concern. Overweight and obesity affect more than one in five children and young people, and are major priorities for public health action.

The survey found that socioeconomic and cultural factors were consistently associated with students' weight, level of physical activity and consumption of energy-dense, nutrient-poor foods. Children of English-speaking backgrounds and those with higher socioeconomic status backgrounds were found to have healthier weight related behaviours in all these respects. Different patterns in many weight related behaviours according to sex and age group were noted, as well as differences between children in urban and rural areas.

The findings from SPANS 2010 provide valuable guidance for policies, programs and practices aiming to reduce childhood overweight and obesity and promote children's healthy lifestyles.

Recommendations

SPANS 2010 provides a comprehensive snapshot of the weight status and related behaviours of school students across NSW. The survey shows that levels of overweight and obesity among NSW school children remain high, although this doesn't appear to be increasing. The report provides invaluable information for guiding policies and programs to reduce childhood overweight and obesity and promote children's health. The information can be used directly to identify issues of concern and priorities for action.

The results suggest that while the portfolio of interventions and awareness raising initiatives that have been implemented in NSW since 2004 through a range of organisations have had an effect, further ongoing action is required. One in five children of school age are overweight or obese and one in six children enter the school system as overweight or obese. Efforts to decrease the incidence of unhealthy weight gain in children will require short, medium and long term action to address environmental as well as behavioural factors.

The evidence from SPANS identifies lifestyle behaviours among children which need attention through a range of strategies and across a range of settings. Action across settings requires commitment from all sectors involved in the health and wellbeing of children. While there are some socio-demographic disparities in lifestyle behaviours, the evidence shows:

- low physical activity levels among school children.
- low mastery of fundamental movement skills.
- high levels of screen time.
- low levels of active transport to and from school.
- high frequency of consuming energy-dense, nutrient poor foods.
- high consumption of sugar sweetened drinks.
- poor food behaviours.

Principles

The following recommendations take into account the results of the SPANS 2010 study, a broader range of research evidence and existing policies, programs and infrastructure in NSW. These recommendations are based on the following principles:

- Recommendations apply to all children and young people in NSW and are inclusive of all population groups, although in some cases there is an additional emphasis on at-risk groups.
- Community, government, private and non government organisations should continue to address the prevalence of overweight and obesity and associated lifestyle behaviours among children and young people as a priority.
- All relevant government, non government and private sectors, including health, education, sport and recreation, local government, transport and urban planning, have a shared responsibility with parents and community groups to act in partnership and within the parameters of their roles, core business and resources to prevent overweight and obesity.
- Recommendations related to particular settings may be undertaken by a range of agencies in partnership.

Recommendations and key settings for action

Early childhood settings

The findings on early primary school age children's weight status, and the socioeconomic and cultural differences observed, indicate the importance of early life interventions with families and childcare services, particularly in disadvantaged communities. While interventions, such as *Munch and Move*® and *Healthy Eating and Active Play* in supported playgroups are currently underway in NSW, it will be important to monitor the reach and impact of these

initiatives and potentially increase their focus and intensity to ensure they are relevant and useful among more disadvantaged and culturally and linguistically diverse (CALD) groups. The recommendations are:

1. To continue to extend and support training for early childhood staff in the teaching of fundamental movement skills and encouraging active play.

2. To continue to work in partnership to support the early childhood sector to routinely provide information to parents on healthy eating and active play.

3. To limit the provision and/or availability of energy-dense, nutrient-poor foods, snacks and beverages and encourage fruit and vegetable consumption in early childhood settings.

4. Support early childhood settings with the development of physical activity, nutrition and food policies and practices.

Family setting

The family and home environments are important influences in the development of healthy lifestyles among children and young people. Establishing healthy lifestyles in the family setting can positively influence children and young people's health related attitudes and behaviours.

There is a clear need for actions to provide specific guidance and support for parents regarding how their household and parenting practices can more consistently promote healthy eating, physical activity and appropriate screen time to their children.

A key focus should be on families with young children because by 6 years of age one in six children are overweight or obese. Of particular note is the need to reduce consumption of energy dense, nutrient poor food and sweetened drinks. The recommendations are to have:

5. Widespread dissemination through multiple channels and settings, including social marketing, of consistent messages to parents and family members including:

   - not making soft drinks available in the home, and offering water as a beverage.
   - alternatives to using confectionery as a reward or treat.
   - foods appropriate for healthy lunchboxes.
   - the importance of a healthy breakfast for children and young people.
   - not eating dinner in front of the television.
   - limiting children's small screen recreation time.
   - not having televisions in children's bedrooms.
   - the value of active commuting.

   Messages and campaigns should be designed to be relevant and effective for more socially disadvantaged families.

6. Active dissemination of The National Physical Activity Guidelines for Australians.

Government policy

Government policies are an important tool to leverage the environments, settings and practices that promote healthy eating and physical activity and to focus public and private investment in obesity prevention. Governments have a unique role in resourcing population monitoring research. There is scope for the evidence provided in the SPANS 2010 results to inform and influence new policy development and implementation at the local, state and national level. The recommendations are to:

7. Advocate for national regulation to limit the marketing of unhealthy foods to children to reduce consumption of energy-dense, nutrient-poor foods.

8. Continue to support state and local governments and the private sector to implement policies and programs that promote and encourage active transport.

9. Continue to support government agencies to resource population health related monitoring research.

10. Provide appropriate infrastructure that supports and enhances active living and promotes the health of communities, from the maintenance of quality public space and parks, to the provision of cycleways and recreational facilities.

Health Services settings

NSW Health has responsibility for protecting and promoting the health of the population. Children who become obese have a 25 to 50 per cent chance of maintaining their obesity into adulthood. Whilst obesity in adulthood confers increased risk of morbidity and mortality, obesity in childhood presents immediate morbidity concerns. To address this concern, guidelines have been developed for use by general practitioners and allied health professionals when providing advice to patients in the clinical setting. The recommendations from this study are that:

11. Health services play a key role in developing strategies to achieve population level health outcomes in healthy eating, physical activity and achieving and maintaining a healthy weight. Population health initiatives are important and it is recommended that the substantial investment in childhood overweight and obesity prevention be continued to prevent overweight, obesity and associated chronic diseases in the community.

12. Health services should implement the National Health and Medical Research Council Clinical Practice Guidelines for the Management of Overweight and Obesity in Children and Adolescents, particularly the regular clinical monitoring of weight status.

Local government and community settings

Local governments promote and protect health by planning for a safe and healthy environment and by providing a range of services to communities. The local neighbourhood has an important role in the provision of opportunities for children, young people and their families to lead healthy lifestyles. Local organisations can plan for and adapt their services to suit the needs of their community, particularly high risk groups. There are a range of actions which can be implemented at a community level, through collaborative arrangements between state government, local government and community organisations, and communities.
The recommendations are to:

13. Continue to enhance opportunities for children and families to use recreational and community facilities for physical activity and play.

14. Implement programs and services which support availability and accessibility of affordable healthy food.

15. Continue to support community-based initiatives that promote active transport in local areas.

Research, evaluation and monitoring

It is important that NSW continues to implement systems for regular monitoring of weight and weight related behaviours. Monitoring systems are important to determine current and historical trends in the health behaviours of school aged children. Ongoing research and evaluation are important to guide and build evidence around future population health interventions. The recommendations are to:

16. Continue to collaborate on a co-ordinated approach to population monitoring of school aged children's weight and weight related behaviours.

17. Continue collaboration between researchers, policymakers, and relevant agencies on the design, implementation and evaluation of interventions to prevent overweight and obesity, and promote healthy lifestyles.

School setting

Schools are an important setting for promoting healthy lifestyle behaviours in children and young people's lives. There is scope for schools to continue and extend the implementation of initiatives designed to promote healthy eating and physical activity and adopt whole school approaches that support healthy lifestyles. Evidence supports programs where health, education, parents and the community work together to provide opportunities for students to lead and maintain a healthy lifestyle. The recommendations are to:

18. Continue to support implementation of the *Fresh Tastes @ School* NSW Healthy School Canteen Strategy to limit the availability of energy-dense, nutrient poor foods and beverages, through school canteens and

vending machines, and make fruit and vegetables (products and meals) readily available in school canteens.

19. Increase opportunities for incidental physical activity in schools, such as through addressing identified barriers that discourage students from participating in physical activity in the school setting.

20. Provide a minimum of two hours of planned physical activity per week for students through physical education and sport.

21. Continue to promote the importance of Personal Development Health and Physical Health (PDHPE) and sport in the school curriculum and provide professional development and support for teachers of PDHPE/sport as well as non-specialist teachers in sport. Specific focus should be on improving students' fundamental movement skills and opportunities for moderate to vigorous physical activity.

22. Implement evidence-based programs and initiatives to increase students' active participation in PDHPE and sport, particularly in relation to groups at greater risk of overweight and obesity.

Sports settings

Participation in sport, and the association between sport and health, means that children's sports settings and events provide an important opportunity to promote other aspects of health, such as healthy eating, to children and young people. The recommendations are to:

23. Implement programs and services to provide and promote water and healthy food choices, and limit the availability of energy-dense nutrient poor foods and drinks in childrens' and young peoples' sports settings and events.

24. Increase opportunities for participation in community sport and recreation, particularly for children from more socioeconomically disadvantaged families. This may require the development of a policy for targeted subsidies to support children and young people's participation in organised sports and recreational activities.

25. Continue providing professional development programs for children's sport coaches with a specific focus on fundamental movement skills and strategies to promote physical activity of moderate to vigorous intensity.

List of figures and tables

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What is SPANS 2010?

The NSW Schools Physical Activity and Nutrition Survey (SPANS) is conducted periodically by the NSW Ministry of Health to monitor weight and weight related behaviours of NSW school-aged children. SPANS surveys have been conducted in 1985, 1997, 2004 and 2010. Over this 25 year period, the survey has produced internationally significant evidence on childhood overweight and obesity and its determinants, which has proven useful to policy makers with a focus on population health.

The fourth SPANS was carried out in Term 1 (February and March) 2010 and had four main aims:

- Provide up-to-date information on the current prevalence and temporal trends of school children's weight status, fitness levels, eating patterns, sedentary behaviour and levels of physical activity.
- Examine the key lifestyle behaviours likely to contribute to a child being overweight.
- Look at the prevalence of some of the risk factors associated with chronic diseases such as heart disease and type 2 diabetes.
- Provide a basis for recommended actions to address the issues.

The full report of the survey is available at www.health.nsw.gov.au and www.health.usyd.edu.au/panorg. This short report comprises a summary of the full report.

How did we carry out the survey?

One hundred and one schools (44 primary and 57 secondary schools), which represented a mix of schools in NSW were surveyed. This included urban and rural, primary and secondary, and government, Catholic and independent schools.

A total of 8,058 children from Kindergarten and Years 2, 4, 6, 8 and 10 took part. Participants ranged from 5 to 16 years of age.

Twenty teachers were seconded to SPANS and were trained to collect the data. The measures included:

- general demographic information to determine locality (urban or rural), socioeconomic status and cultural background.
- height, weight and waist girth (anthropometry).
- fundamental movement skill proficiency.
- physical activity and cardiorespiratory fitness.
- modes of travel to and from school.
- the time usually spent in sedentary behaviours.
- food consumption and behaviours.

The Principal of each participating school provided information on the school's physical activity environment, including facilities and sports staff, to measure opportunities for physical activity in the school setting.

Not all measures were administered to all students. Table 1 shows which measures were administered to which Year group.

Table 1: Measures administered to each Year group and their approximate ages

Measure	Kindergarten	Year 2	Year 4	Year 6	Year 8	Year 10
	Age 5-6	Age 7-8	Age 9-10	Age 11-12	Age 13-14	Age 15-16
Demographics	✓	✓	✓	✓	✓	✓
Anthropometry	✓	✓	✓	✓	✓	✓
Fundamental movement skills		✓	✓	✓	✓	✓
Cardiorespiratory endurance (fitness)			✓	✓	✓	✓
Student questionnaire				✓	✓	✓
Parent (proxy) questionnaire*	✓	✓	✓			

* The student and the parent (proxy) questionnaire were identical and comprised questions on physical activity, sedentary behaviour, school travel, food consumption and behaviours.

A self-reported questionnaire was administered to students in Years 6, 8 and 10 and to the parents of students in Years K, 2 and 4 who were asked to report on their child's behalf.

The findings are believed to accurately represent the school age population of NSW due to satisfactory survey response rates and similar demographic characteristics of the sample to the NSW population of primary and secondary school students.

Prevalence rate reporting

Post stratification weights were calculated and applied to the SPANS data to account for variations in school and student response rates among education sectors, geographic locations, and Year groups. Survey weighting allows inferences to be made from a survey sample to the populations that they represent. All analyses for the 2010 survey were weighted except for the trend analyses (with the exception of Figure 2 and related text which uses weighted data).

Weight status

The proportion of Australian children who are overweight or obese has been a serious public health concern for some decades. Excess weight gain in childhood tends to persist into adult life, increasing the risk of chronic diseases, including type 2 diabetes, cardiovascular disease and fatty liver disease.

Factors such as physical activity, sedentary lifestyles, transport options, dietary habits and eating patterns can all contribute to unhealthy weight gain. As these factors can be influenced and modified, it is important to monitor such behaviours and trends in order to effectively promote healthy weight and lifestyles among children and young people.

Method

The height and weight of each participant was measured by field staff to assess the level of overweight and obesity. Body Mass Index (BMI) was used to ascertain whether respondents were in a healthy or unhealthy weight range, using age-and sex-appropriate categories recommended by the International Obesity Task Force.[1,2]

BMI was calculated using the following formula:

$$\text{Body Mass Index} = \frac{\text{weight in kg}}{(\text{height in m})^2}$$

Current rates

More than one in five (22.8%) NSW school-aged children from Kindergarten to Year 10 (aged 5 to 16 years) were overweight or obese (24% of boys and 21.5% of girls). For boys, 17.6% were overweight and 6.4% were obese, and for girls, 16.5% were overweight and 5.0% were obese.

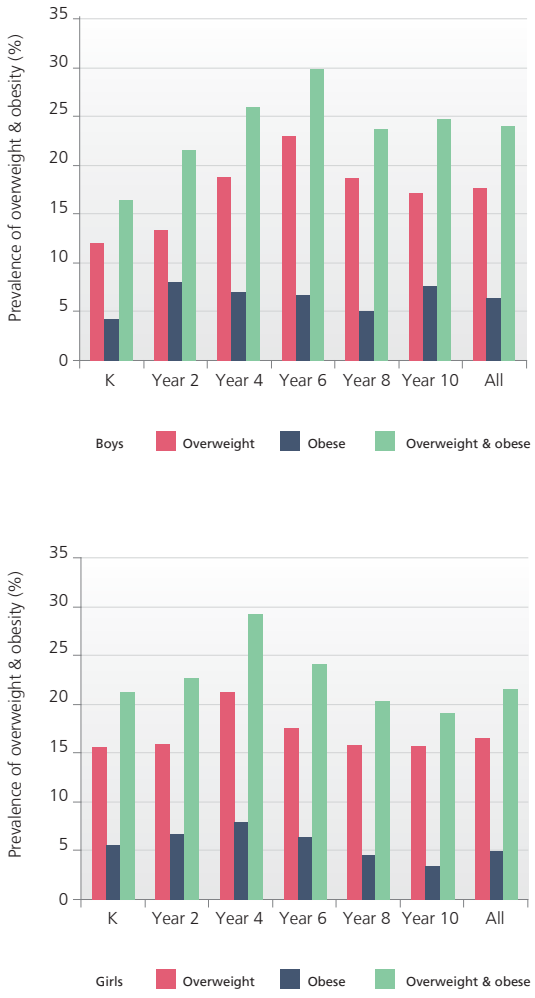
When year groups were compared, in boys, the prevalence of combined overweight and obesity rose from 16.4% among Kindergarten boys to nearly 30% among Year 6 boys, then fell to around 24% among secondary school boys (Figure 1). For obesity alone, the prevalence was 4.3% among boys in Kindergarten, rising to a peak of 8.1% among Year 2 boys, before tapering off and then rising again to 7.6% in Year 10 boys.

In girls, the rate of combined overweight and obesity was generally between 20% and 24% depending on age group, with a peak of 29.1% among Year 4 girls. For obesity alone, the prevalence rose from 5.6% among girls in Kindergarten to a peak of 8.0% among Year 4 girls, then declined to 3.4% among Year 10 girls.

Other patterns to emerge include:

- Overall, the prevalence of combined overweight and obesity was higher among students from low socioeconomic status backgrounds (27.5%), compared with students from high socioeconomic status backgrounds (19.6%).
- The prevalence of obesity among Year 10 boys was almost twice that of Year 10 girls (7.6% and 3.5%, respectively).
- Children from a Middle-Eastern cultural background, especially girls in Year 6, were more likely to be overweight than their English-speaking background peers (58.5% and 22.8%, respectively).
- Over 70% of parents of overweight, and a quarter of parents of obese children (26.3%) in Years K, 2 and 4 perceived their child to be about the right weight.

Figure 1: Prevalence of overweight, obesity and combined overweight and obesity among boys (upper panel) and girls (lower panel) by Year group (%).



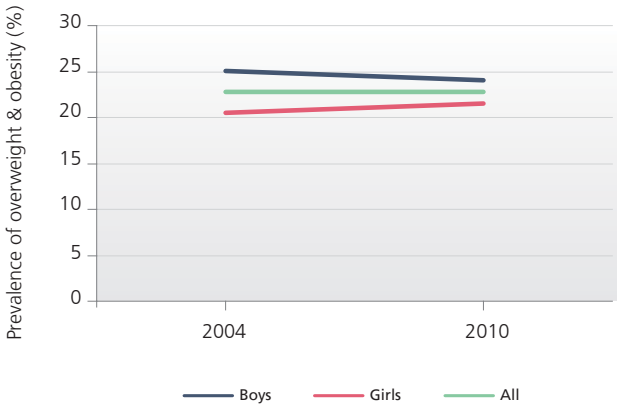
Change in overweight and obesity: 2004-2010

Since 2004 there has been no change in the prevalence of combined overweight and obesity among five to 16 year old NSW school children (Figure 2). The prevalence of combined overweight and obesity has stabilised during the last six years at 22.8%.

Among boys, the prevalence of overweight and obesity decreased between 2004 and 2010, from 25.1% to 24.0%. However, among girls, the prevalence of overweight and obesity increased from 20.5% to 21.5%.

For year groups, the prevalence of combined overweight and obesity significantly decreased among Year 4 and 8 students, with an average annual decrease of 0.13% and 0.52%, respectively. Conversely, a significant annual increase in prevalence was observed among Year K (0.17%), Year 2 (0.43%) and Year 6 (0.18%) students.

Figure 2: Prevalence of combined overweight and obesity in 2004 and 2010 among all students and by sex (%).



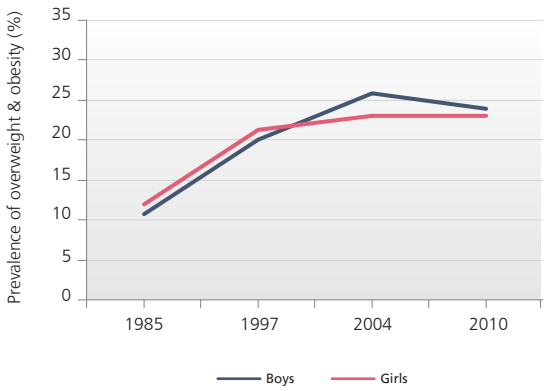
Temporal trends in overweight and obesity 1985–1997 - 2004–2010

NSW, unlike other Australian states, has BMI data for four time points across a 25-year period. Although the survey methodology was consistent across surveys, the information required to calculate post-stratification weights for 1985 and 1997 surveys was not available. In order to determine trends in the prevalence of combined overweight and obesity among NSW school children, the prevalence rates for each survey year are presented unweighted. Note that the prevalence rates for 2004 and 2010 in Figure 3 and related text differ from the data presented in Figure 2, as the data in Figure 2 are weighted estimates.

Between 1985 and 1997 the prevalence of overweight increased by over 50% (from 9.9% to 15.6%) and the prevalence of obesity increased more than threefold (from 1.5% to 5.1%) among NSW school children (see Figure 3, which presents this trend by sex).

The average annual rate of change in the prevalence of combined overweight and obesity between 1985 and 1997 was 0.63% to 0.87% across all year groups. The overall average annual rate of change in prevalence for all students was 0.78%.

Figure 3: Prevalence of combined overweight and obesity among boys and girls for the 1985, 1997, 2004 and 2010 NSW data sets (%).



Summary

In 2010, more than one in five NSW children (aged 5 to 16) were overweight or obese. Boys in Year 6 and girls in Year 4 had some of the highest rates, which are potentially due to pre-pubertal growth spurts. Children from lower socioeconomic backgrounds were more likely to be overweight or obese when compared to students from higher socioeconomic backgrounds. Similarly, students from Middle-Eastern backgrounds were more likely to be overweight or obese when compared to their English-speaking background peers.

Overweight and obesity is still about twice as common as it was 25 years ago. However, the rise noted in earlier years appears to be levelling out, which may indicate a degree of success in public health initiatives to curb the growth of unhealthy weight in NSW children and young people.

4

Food consumption

Diet is a key factor affecting children's growth and development. A healthy diet can help protect against overweight and obesity, dental decay and some diseases later in life, such as heart disease and certain types of cancer.

Food habits acquired during childhood and adolescence tend to continue into adult life, so an examination of the frequency and volume of the various food groups eaten by children can highlight problem areas and indicate priorities for public health interventions.

Method

Information about student's dietary intake was collected using a short food frequency questionnaire developed for NSW population-based monitoring surveys.[3] The questions were used to rank individuals according to their intake, and indicate differences in diet quality. The questions do not provide accurate information on the amounts of foods consumed and estimates of the percentage of students meeting dietary recommendations[4,5] must be interpreted with caution.

The questions pertain to indicator foods for core (ie fruit, vegetables, water, red meat) and non-core energy-dense, nutrient-poor food products (ie processed meat, milk, fruit juice, soft drinks, fried potato products, sweet and salty snack foods, confectionery and ice cream) which have been associated with weight and health status.

Results

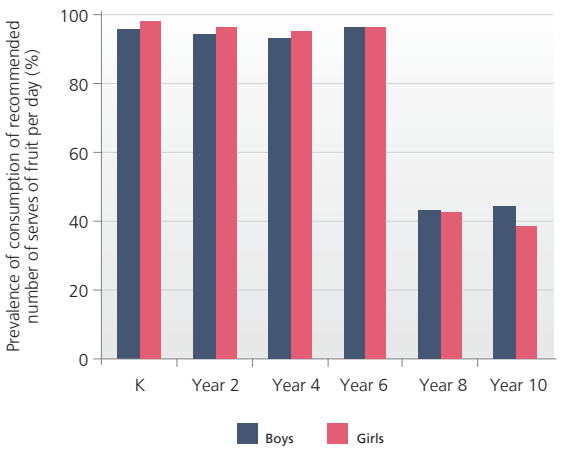
Fruit

The *Australian Guide to Healthy Eating*[4] recommends that children aged 4–11 years (corresponding to approximately Years K to 6) consume at least one serve of fruit per day and adolescents aged 12–18 years (corresponding to Years 8 to 10) consume at least three serves per day.

While more than 96% of primary school students met the recommended daily fruit intake, only two fifths (42.1%) of secondary school students did so (Figure 4). When a cup of fruit juice was included as a serve of fruit, the proportion of secondary students who met the recommended daily intake increased to approximately 54%.

There were no consistent associations between students' sociodemographic characteristics and meeting the recommended daily intake of fruit.

Figure 4: Prevalence of the consumption of the recommended number of serves of fruit per day among boys and girls by Year group (%).

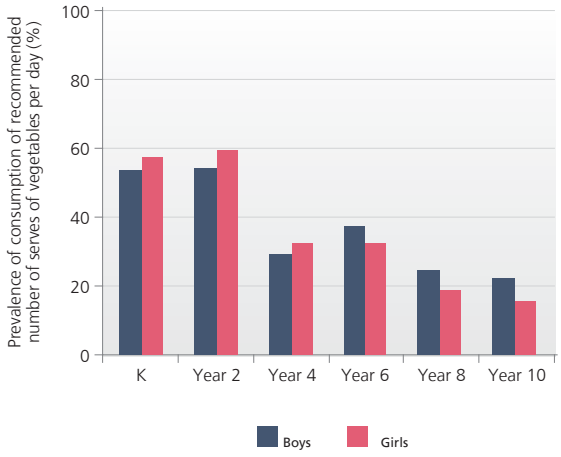


Vegetables

Approximately half of Year K and 2 students, one-third of Year 4 and 6 students and less than one-quarter of Year 8 and 10 students reported consuming the recommended number of daily vegetable serves (two, three and four, respectively)[4] (Figure 5). Year 8 and 10 girls reported consuming significantly fewer vegetables than boys.

Overall, the proportion of students meeting the recommended number of daily vegetable serves was consistently significantly lower among primary school students from Asian cultural backgrounds than those from English-speaking backgrounds.

Figure 5: Prevalence of the consumption of the recommended number of serves of vegetables per day among boys and girls by year group (%).



Sweetened drinks

Fruit juice

Because it lacks dietary fibre, fruit juice should not be considered a substitute for fresh fruit. Excess fruit juice consumption can detract from a well-balanced diet and contribute to a high energy intake resulting in weight gain and obesity.

Between 17% and 38% of students reported consuming more than one cup of fruit juice per day, with the highest intake reported in students in Years K to 4.

Soft drinks

Almost one in eight primary (13.2%) and secondary (13.8%) school students reported drinking one or more cups of soft drink daily.

Across all Year groups, students from low socioeconomic status backgrounds were more likely to report consuming two or more cups of soft drink per week than students from high socioeconomic status backgrounds.

There were no clear and consistent associations between the regular consumption of soft drink and BMI.

Figure 6: Usual consumption of soft drinks among boys (upper panel) and girls (lower panel) by Year group (%).

Unsweetened drinks

Milk

The majority of students reported usually consuming whole milk, with boys, across Year groups (47-70%) slightly more likely to do so than girls (40-69%).

The *Dietary Guidelines for Children and Adolescents in Australia*[5] recommends reduced/low fat milk for children aged two years and above. The proportion of students choosing low fat, reduced fat or skim milk increased from 22% in Year K to 36% in Years 8 and 10.

Overweight boys (Years 2, 8 and 10), overweight girls (Years K, 2 and 4), obese boys (Years 2 and 10) and obese girls (Year 6) were significantly more likely to report consuming low fat milk than those of a healthy weight.

Water

Approximately two thirds of primary (68.9%) and secondary (63.5%) school students reported consuming two or more cups of water per day. Approximately 10% of students reported consuming one cup of water per day. Only a few students reported consuming one cup or less per week (<3%).

Confectionery, fried potato products and other snack foods

Confectionery includes chocolates and lollies. Between 21% and 33% of students ate confectionery three to six times per week, with another 7–10% of students eating confectionery daily.

Confectionery contains large amounts of fat and/or sugar and is considered an 'extra' food in the *The Australian Guide to Healthy Eating,*[4] which recommends that confectionery be eaten sometimes, in small amounts, or not at all.

Fried potato products were eaten at least once per week by two thirds of students, with 15% eating these products at least three times per week. The highest consumers were students from low socioeconomic status backgrounds and those with Middle-Eastern backgrounds.

Other snack foods such as crisps and salty snacks, biscuits, cakes, doughnuts, muesli bars, ice cream and other energy-dense, nutrient-poor foods were eaten by about one third of students three to six times per week and by 10% on a daily basis.

Summary

Most students in Years K, 2, 4 and 6 consumed the recommended amount of fruit each day, but too few consumed the recommended amount of vegetables, especially in Years 8 and 10.

Many students consumed too much soft drink, while milk consumption was generally low. Most students consumed confectionery, ice cream and snack foods, especially fried potato products, too often each week.

Food behaviours

There are many factors that influence a child's dietary intake, including the types of foods and drinks available to them at home or at school, the foods eaten by peers or family members and the food marketing to which they are exposed.[6-8] Parents play a crucial role in the development of children's food preferences and food intake, which may impact on children's weight in the long-term.[9,10]

SPANS included questions on key household behaviours associated with poor eating habits and the development of unhealthy weight gain, including skipping breakfast, eating dinner in front of the television, and purchasing unhealthy foods and drinks at school. It also included questions about the types of foods and drinks offered by parents, and the types of foods and drinks consumed outside the home. Questions related to soft drink and fast food consumption, including foods and drinks bought from the school canteen or a school vending machine.

Method

A self-reported questionnaire was administered to students in Years 6, 8 and 10, and to the parents of students in Years K, 2 and 4, who were asked to report on their child's behalf. Some additional specific behaviours relating to fast food consumption were examined among students in Years 6, 8 and 10. These included whether students were more likely to go to fast food outlets with family or friends, whether they chose 'value' meals or 'upsized' their fast food choices, questions related to behaviours surrounding soft drink consumption, and whether they believed they were influenced by food advertising.

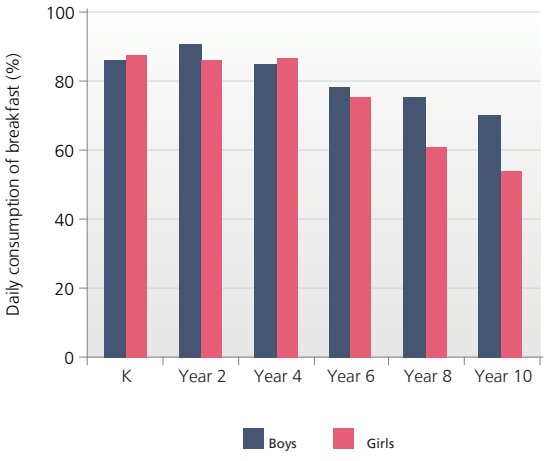
Results

Eating breakfast

While almost 85% of students in Years K, 2 and 4 ate breakfast every day, this behaviour declined to approximately 68% among Year 6, 8 and 10 students, especially among girls (Figure 7). Only half (54.1%) of Year 10 girls reported eating breakfast daily.

Boys were more likely to eat breakfast daily than girls. Obese students were less likely to eat breakfast daily than their healthy weight peers.

Figure 7: Daily consumption of breakfast among boys and girls in Years K, 2, 4, 6, 8 and 10 (%).



Eating dinner in front of the television

One in ten (13.2%) primary school students reported eating dinner in front of the television every day. One in six (15.4%) secondary students reported eating dinner in front of the television every day. Around half of the students ate dinner in front of the television at least once per week (with the highest rate being 60.8% among Year 10 boys).

Water with meals

The majority of parents (83.8%) of Year K, 2 and 4 students usually offered their child water to drink with their meals or snacks.

Parents offering sweets for good behaviour

Only a few parents of primary (9.7%) and secondary (6.7%) school children usually offered their child sweets as a reward for good behaviour.

Lunch bought from the school canteen

In schools which have a canteen, fewer than half (47.5%) of primary and a third (33.1%) of secondary school students bought their lunch once per week from the canteen.

Approximately 12.4% of primary and a quarter (27.4%) of secondary school students bought their lunch from the school canteen between two and five times per week.

Drinks bought from the school canteen

In schools which have a school canteen, the most common drink purchased at the school canteen by primary school students was milk (43.7%), followed by fruit juice (27.6%).

Among secondary school students, the most common drinks purchased at the school canteen, were milk (24.0%), soft drinks (22.4%) and fruit juice (20.1%).

Drinks bought from the school vending machine

In schools which have a vending machine for drinks, the most common drink purchased by primary school students was water (27.4%), followed by fruit juice (25.5%) and sports drinks (19.8%).

Among secondary school students, the most common drinks purchased at the school vending machine were soft drinks (36.1%) and water (23.4%).

Eating takeaway meals or snacks from a fast food outlet

Approximately one quarter of primary school (24.3%) and secondary school (28.8%) students reported eating meals or snacks from fast food outlets one or more times per week.

Soft drink availability in the home

Almost a third of students (29.3%) in Years 6, 8 and 10 reported that soft drinks were usually available in their homes.

Summary

Food behaviours within and outside the home environment that negatively influence dietary intake were prevalent among NSW school students. These food behaviours included skipping breakfast, regularly eating dinner in front of the television, parents offering sweets to children for good behaviour, eating foods from fast food outlets and purchasing soft drink from the school canteen and school vending machine.

Physical activity among Years K, 2 and 4 students

Physical activity has many health benefits for young people. This includes strong bone development, better psychological health and improved metabolic profile, as well as better prospects of maintaining a healthy weight. In addition, many forms of physical activity enable young people to connect with their peers and develop important social skills.

Physically active children and young people are more likely to grow into physically active adults. In adult life, vigorous physical activity is associated with improved blood pressure, cholesterol and insulin profiles which are all related to reduced risk of coronary heart disease and type 2 diabetes.

The National Physical Activity Guidelines for Australians recommend that students spend at least one hour in moderate-to-vigorous physical activity (MVPA) every day.[11]

Method

The parents of students in Years K, 2 and 4 were asked to report on their child's participation in physical activity using questions developed for the NSW Population Health Survey.[12] The questions asked about time spent in organised and non-organised physical activities, but parents did not report the actual activity. Therefore, it is not possible to determine whether the children met the physical activity recommendation of activity at moderate-to-vigorous intensity, but only to estimate if they spent 60 minutes or more per day being active.

Results

Overall, less than half of the Years K, 2 and 4 students spent 60 minutes or more per day in physical activity. Boys (50.5%) were more likely to do so than girls (42.2%), but large numbers of young children failed to reach the minimum time required to have a positive health effect.

Other findings include:

- The median daily time spent in organised physical activity increased across Year groups.
- In Years 2 and 4, boys were significantly more likely than girls to engage in sufficient physical activity.
- Students from Asian and Middle-Eastern cultural backgrounds were significantly less likely to meet the guideline compared with their English-speaking background peers.
- Students from rural areas, especially girls, were more likely than urban students to meet the guideline.
- There were no consistent significant associations between socioeconomic status and being active for 60 minutes or more per day.
- Overweight and obese students were less likely than their healthy weight peers to meet the guideline.

Only one fifth of parents of Years K, 2 and 4 students knew how much exercise the physical activity guideline recommends for children.

Less than one in five (19.1%) primary school children participated in the federally funded Active After School Communities (AASC) program in the last 12 months, with more boys taking part than girls. Those who did participate in AASC programs were not significantly more likely to meet the physical activity guideline.

Summary

In 2010, the survey found that a substantial proportion of students in Years K, 2 and 4 were less active than recommended, particularly girls and those in the younger age groups.

Physical activity among Years 6, 8 and 10 students

Physical activity is beneficial across the lifespan, providing health benefits from infancy to old age. Some of the health benefits of physical activity during childhood and adolescence include favourable skeletal development, improved metabolic profile and psychological wellbeing, and increased likelihood of physical activity in later life. Health benefits accrue from spending time in physical activities that are of at least a moderate intensity.

Method

Information on physical activity was self-reported by students in Years 6, 8 and 10, using the Adolescent Physical Activity Recall Questionnaire (APARQ),[13] which indicates whether children are meeting the physical activity guideline.

Results

In summer school terms, less than two thirds (62.7%) of students in Years 6, 8 and 10 did at least one hour of moderate-to-vigorous physical activity per day. Boys were more active than girls (66.8% and 58.1%, respectively).

In winter school terms, only half (51.3%) of the students in Years 6, 8 and 10 met the physical activity guidelines. Again, boys were more active than girls (57.4% and 44.5%, respectively).

Other findings include:

- Students from higher socioeconomic status backgrounds were more likely to meet the physical activity guideline than students from low and middle socioeconomic status backgrounds.
- Students from Asian cultural backgrounds, and girls from Middle-Eastern backgrounds, were significantly less active than their English-speaking background peers.
- Students with a healthy weight were more likely to meet the guideline than overweight or obese students.

Only one fifth of students in Years 6, 8 and 10 knew that the physical activity guidelines recommend they have at least 60 minutes of moderate-to-vigorous physical activity each day.

From 2004 to 2010 there was a significant decline in students' physical activity, with the exception of Year 10 girls, during both summer and winter terms (Figure 8). This is a reversal of the gains observed between 1997 and 2004.

Figure 8: Prevalence of one hour per day of moderate-to-vigorous physical activity during summer (upper panel) and winter (lower panel) school terms among boys and girls in Years 8 and 10 in 1997, 2004 and 2010 (%).

Summary

In 2010, the survey found that a substantial proportion of students in Years 6, 8 and 10 were less active than recommended, particularly girls and children of lower socioeconomic status and of Asian cultural backgrounds.

School travel

The survey examined students' modes of travel to school in recognition of the health benefits of active commuting and the need to reduce car dependency among children.

The term 'active travel' refers to walking, cycling or other means of transport that involve physical activity. It includes using public transport, because this invariably requires some walking.

Active travel is often overlooked as a factor contributing to a person's daily physical activity, which in turn is associated with better bone health, decreased cardiovascular risk and improved psychosocial wellbeing.

Since the 1970s, the proportion of Australian children actively travelling to school has declined substantially, with a significant increase in the number of children being driven to and/or from school.

Method

Students were asked to report separately, how they travelled *to* school and also how they travelled home *from* school in a usual week. A checklist of nine modes of transport was provided: walking; train; bicycle; skateboard or scooter; car; school bus; other bus; ferry; and other transport.

Students in Years 6, 8 and 10 and parents of students in Years K, 2 and 4 were asked which modes of transport they (or their child) used, on how many days (1–5) they used these types of transport, and how long they spent on each mode each time they used them. (The proportions travelling by car, public transport or by walking do not add up to 100% because students could report more than one mode of transport for each trip).

Results

Overall, about 20% of primary and 15% of secondary school students reported using only active travel to school. Slightly more boys than girls used active travel, and it was most common among Year 6 students (Figure 9).

The proportion of students using public transport to get to school increased with age. Among secondary school students 19-22% used public transport.

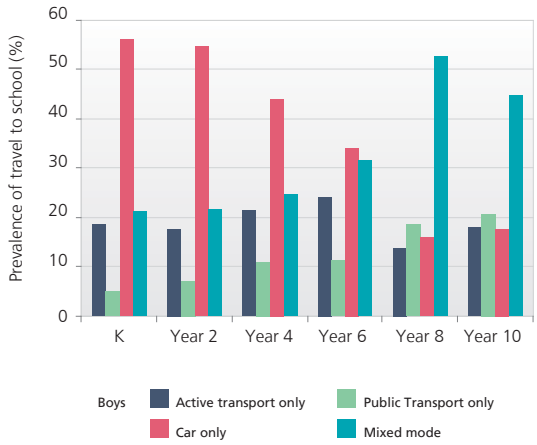
Younger children were more likely to be driven to and/or from school. This was the usual mode of transport for more than half the children in Years K and 2. About a third of Year 6 students travelled to school by car every day, while among secondary school students, about 16% were driven to school and only 7-10% returned home by car.

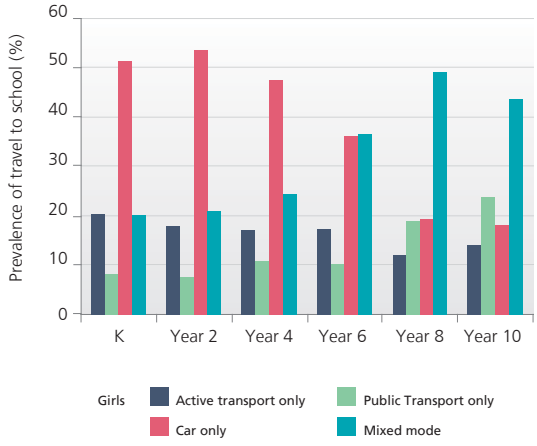
Other findings include:

- Active travel to school was more common among students in Year K and girls in Years 2 and 4 from Asian cultural backgrounds than among their English-speaking background peers.
- The use of public transport was lower among students from high socioeconomic status backgrounds when compared to their lower socioeconomic status background peers.
- The mean time spent in active travel rose from 10–13 minutes per day for primary students to 16–20 minutes for secondary school students.

- Mixed modes of travel were the most common means of transport to and/or from school for secondary students.
- In general, there were no consistent significant associations between school commuting modes, sociodemographic characteristics and BMI categories.

Figure 9: Prevalence for each mode of travel to school among boys (upper panel) and girls (lower panel) by Year group (%)





Summary

The school travel patterns of primary school students were quite different to those of secondary students. Travel by car was more common among younger children, and mixed modes of travel were dominant in older children, especially in Years 8 and 10.

The proportion of students using only public transport to get to and/or from school increased with age.

Fundamental movement skills

Fundamental movement skills are the building blocks for movement and they form the foundation for many of the specific motor skills required in popular sports and leisure time activities. Research has shown that children and adolescents with greater proficiency in fundamental movement skills tend to be more physically active and have higher levels of cardiorespiratory fitness, scholastic and athletic competence, and self-esteem.[14-16]

Moreover, developing fundamental movement skills during childhood helps to establish habits of physical activity that provide benefits throughout life.

Fundamental movement skills may be categorised as:

- locomotor skills such as the sprint run, hop, vertical jump, skip, leap and gallop
- stability skills such as the static balance, bend, sway, twist, dodge and turn
- object control (or manipulative) skills such as the throw, catch and kick.

Method

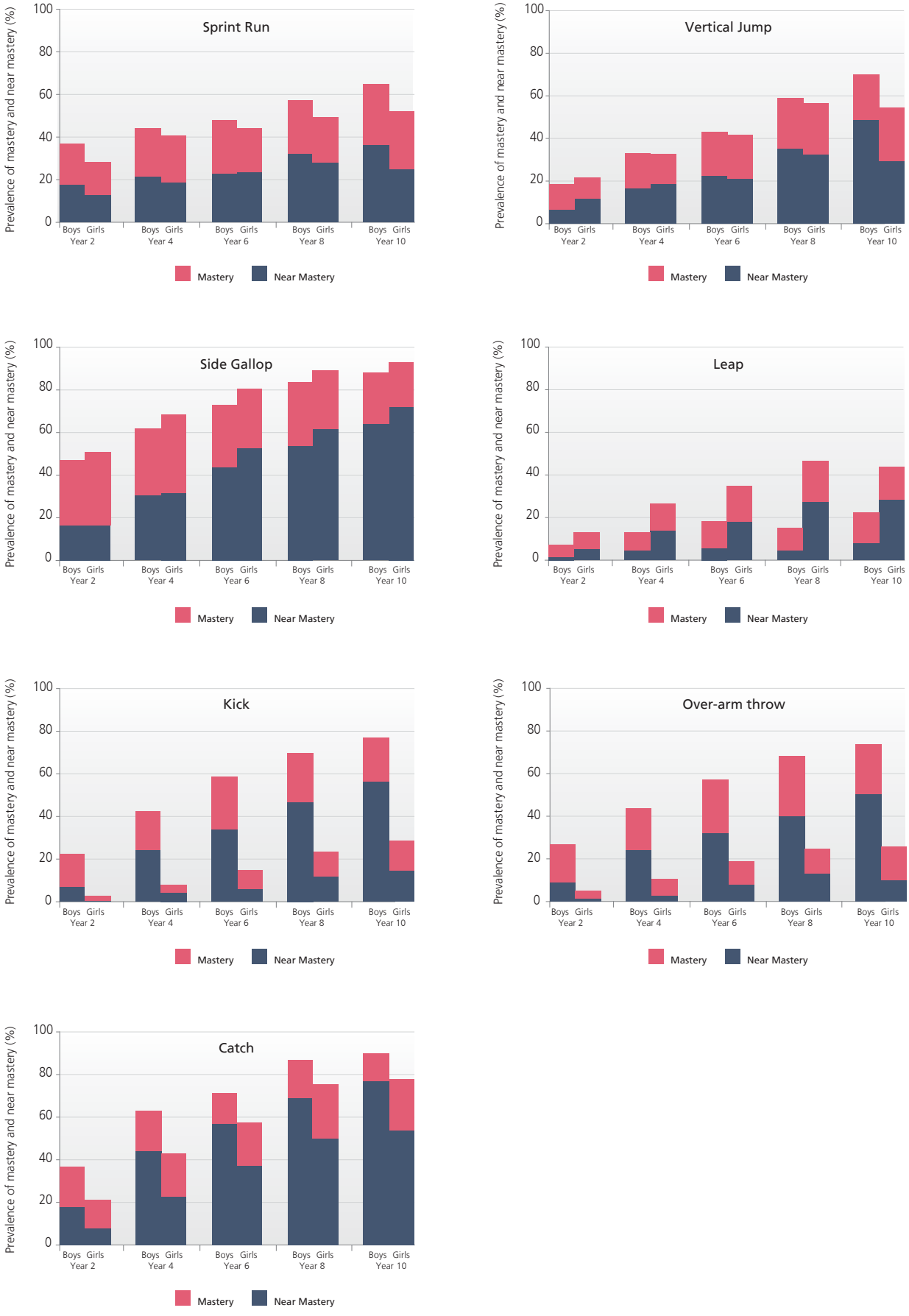
Seven fundamental movement skills were assessed among Year 2 and older students. Four were locomotor skills: sprint run, vertical jump, side gallop and leap. Three were object-control skills: catch, over-arm throw and kick. Assessment of the skills used process-oriented checklists, with five to six components for each skill, which were recorded as present or not present. For each skill, a score was calculated for each student based on the total number of components performed correctly. From this, two fundamental movement skill proficiency outcomes were created. One is mastery, ie possessing all components of a skill. The other is near-mastery, ie possessing all components bar one. Advanced skills represents the composite of students with mastery and students with near mastery. Children should be proficient in these skills by around Year 4.

Results

Mastery of fundamental movement skills (ie advanced skills) increased significantly with age (Figure 10). Other findings include:

- Overall, the level of mastery for all fundamental movement skills, except the side gallop and catch, was low among students, with only 50–60% of Year 6 and older students being proficient in these skills.
- Boys were significantly more proficient at kicking, throwing, catching, running and vertical jumps than girls.
- Girls were more proficient at the leap and the side gallop than boys.
- Mastery was higher among students from higher socioeconomic status backgrounds compared with students from lower socioeconomic status backgrounds.
- Mastery was lower among students from Middle-Eastern and Asian cultural backgrounds compared with students from English-speaking backgrounds.
- Overweight and obese students were less proficient in locomotor skills (ie running, vertical jump) than their healthy weight peers.

Figure 10: Prevalence of skill mastery and near-mastery among boys and girls in Years 2, 4, 6, 8 and 10 (%)



Trends

Between 1997 and 2004 there were statistically significant improvements in the prevalence of fundamental movement skills among NSW school children, especially boys (Figures 11 and 12). This could be attributed to the development of the *Get Skilled: Get Active* resource developed by the former NSW Department of Education and Training (2000).[17] Since 2004, only some skills (sprint run, side gallop and catch) showed small improvement in the prevalence of advanced skills, while advanced skills for the vertical jump, over-arm throw and leap declined.

Figure 11: Prevalence of mastery of the vertical jump in 1997, 2004, and 2010 by sex and Year group (%) (Boys upper panel and Girls lower panel)

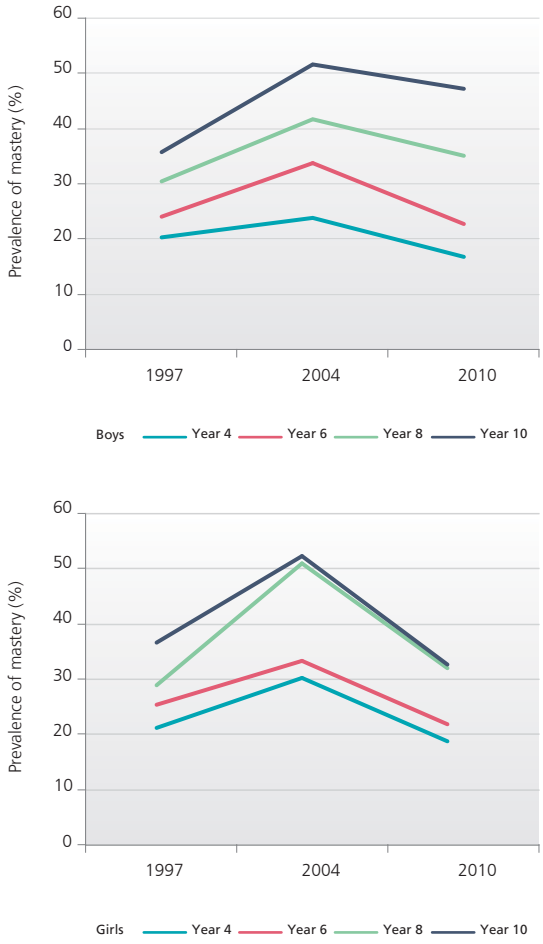


Figure 12: Prevalence of mastery of the kick in 1997, 2004, and 2010 by sex and Year group (%) (Boys upper panel and Girls lower panel)

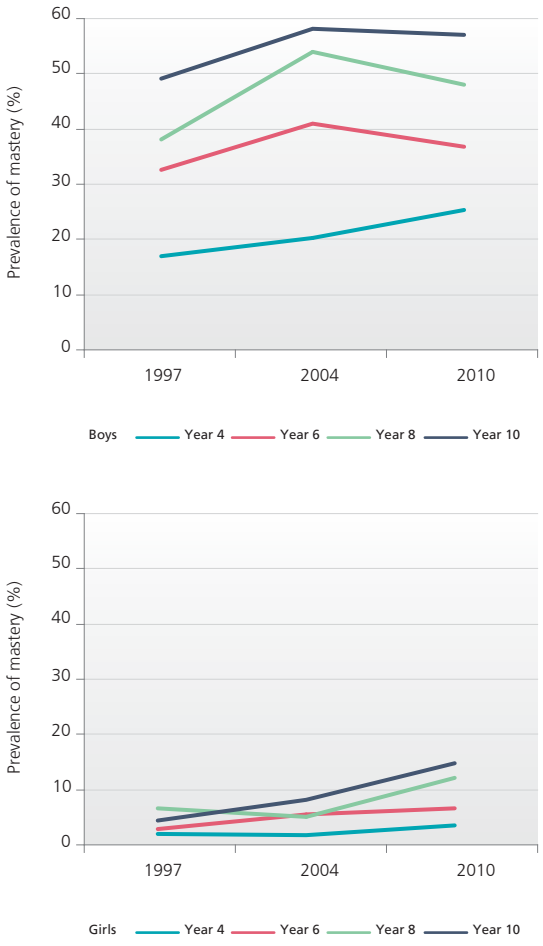
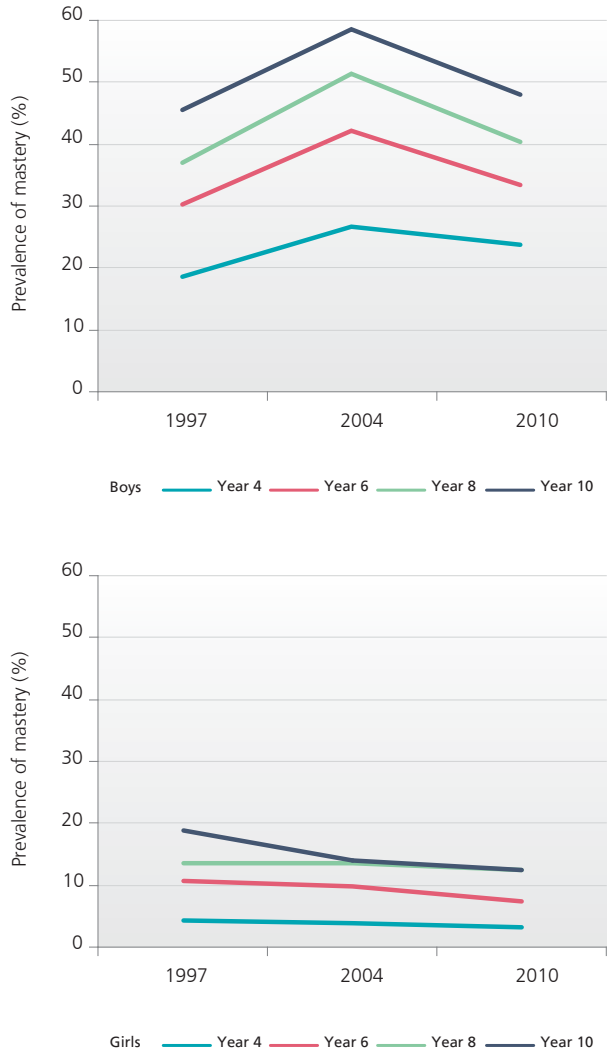


Figure 13: Prevalence of mastery of the over-arm throw in 1997, 2004, and 2010 by sex and Year group (%) (Boys upper panel and Girls lower panel)



Summary

The gains in fundamental movement skill proficiency which were observed between 1997 and 2004 were not seen in 2010. While there were some small increases in proficiency of some fundamental movement skills, the proficiency of other skills has declined since 2004. There was some evidence of socioeconomic status disparities among students. Overall, there was a tendency for students from lower socioeconomic status backgrounds to be less proficient than their higher socioeconomic status peers and for students from Middle-Eastern or Asian cultural backgrounds to be less proficient than their English-speaking background peers.

Cardiorespiratory fitness

Cardiorespiratory fitness, sometimes referred to as aerobic fitness or maximal aerobic power, is the ability of the circulatory and respiratory systems to supply oxygen to skeletal muscles during sustained physical activity. Cardiorespiratory fitness is in part genetically determined, but it can be greatly influenced by environmental and behavioural factors. Importantly, fitness during childhood is an important determinant of fitness during adulthood.

Low levels of cardiorespiratory fitness raise the risk of cardiovascular diseases, insulin resistance, type 2 diabetes and all-cause mortality, as well as lower psychosocial wellbeing.[18-21]

There is emerging evidence that better cardiorespiratory fitness is also associated with better academic performance.

Method

Cardiorespiratory fitness was assessed among students in Years 4, 6, 8 and 10. These students participated in a 20 metre sprint run test commonly known as the 'beep test'. Scores were recorded as the level and shuttle reached in the test and converted to the number of laps completed. Based on this score, students were categorised as 'adequately fit' or 'unfit' using age and sex adjusted criterion referenced standards from the FITNESSGRAM Test Administration Manual.[22]

Results

Two thirds of the boys and girls tested were adequately fit, with the highest proportion of fit students in Year 6.

Among boys, the prevalence of adequate fitness ranged from 57% (in Year 4) to 70% (in Year 6). Among girls the prevalence was slightly higher than among boys, except in Year 10. More than three quarters of Year 6 girls were adequately fit.

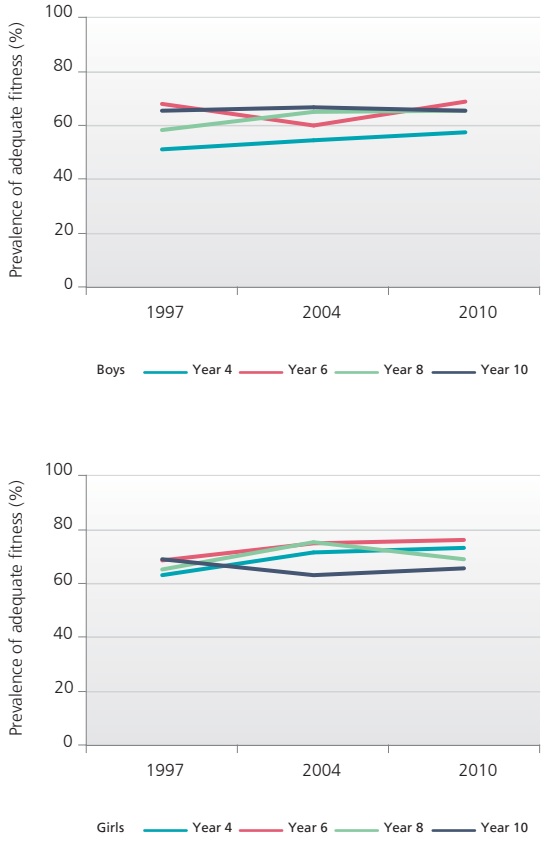
More students from the highest socioeconomic status backgrounds were fit than students from low socioeconomic status backgrounds. The differences were statistically significant in all Year groups except Year 4.

Boys and girls from Middle-Eastern cultural backgrounds, especially girls in Years 6 and 10 were consistently less fit than their English-speaking background peers. This was also the case for Year 6 boys from Asian cultural backgrounds. With the exception of Year 4, overweight and obese students were significantly less fit than their healthy weight peers.

Trends

Overall, the proportion of students who were classified as adequately fit increased from 1997 to 2004 (Figure 14). Between 2004 and 2010, there was an increase in fitness levels among boys, especially in Year 6, but an overall decrease among girls, especially in Year 8.

Figure 14: Trends in prevalence of adequate fitness among boys (upper panel) and girls (lower panel) in Years 4, 6, 8 and 10 in 1997, 2004 and 2010 (%).



Summary

About two thirds of students were classified as adequately fit. Students with higher socioeconomic status backgrounds were significantly fitter than their lower socioeconomic status peers. Overweight and obese students were less fit than those with healthy weights, as were girls from Middle-Eastern cultural backgrounds. A substantial number of NSW students were found to be unfit, which places them at an increased risk of developing chronic disease associated with insufficient levels of cardiorespiratory fitness.

11

Sedentary behaviours

Societal changes in recent decades have led to concerns that young people spend too much time being sedentary, for example watching television and playing computers or video games and that they are more sedentary than previous generations. Sedentary habits tend to persist into adult life and are associated with weight gain and the development of several chronic diseases, including osteoporosis, type 2 diabetes and cardiovascular diseases.

Sedentary behaviours are defined as behaviours done while sitting or lying (but not sleeping) that result in low energy expenditure. Children generally spend 30–35 hours per week sitting in class, and also engage in many other sedentary activities outside of school hours that serve important social and cognitive developmental needs, including homework, sitting with friends, chatting, doing hobbies and reading. Accordingly, the Australian electronic media guideline, which is included in the Australian Physical Activity Guidelines recommends that children aged 5 to 18 years should spend no more than two hours per day in small screen recreation.[11]

Method

Information on a range of sedentary activities was collected using the Adolescent Sedentary Activity Questionnaire (ASAQ).[23] Students in Years 6, 8 and 10, and parents of students in Years K, 2 and 4, were asked to think about a usual week. From a list of 12 common sedentary activities outside school hours, they were asked to report on the time spent in each activity for every day of the week.

The raw data was summarised to find the total time the children spent in sedentary behaviours each week outside of school hours.

The data was also used to determine the total number of minutes per week outside of school hours spent in each of the following categories of sedentary behaviour:

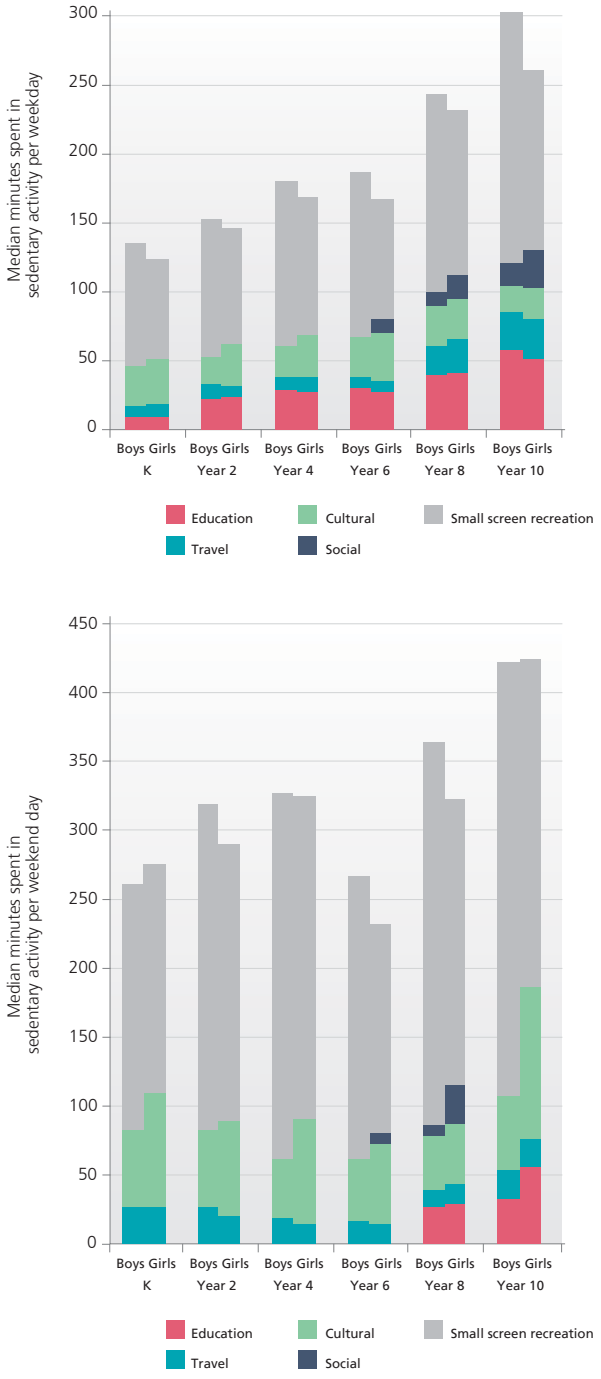
- small screen recreation: watching television, watching videos/DVDs, playing computer or video games
- education: using the computer for homework, being tutored, Saturday school
- travel: by car, bus, train or ferry
- cultural activities: reading for fun, doing crafts or hobbies, playing or practicing a musical instrument
- social activities: sitting around, chatting with friends, 'chilling out'.

Results

On a usual week day, students in Years K, 2 and 4 spent about 3–3.5 hours outside of school time in sedentary activities. For students in Years 6, 8 and 10, the time spent on sedentary behaviours was about 4–6 hours. On a usual weekend day, students in Years K, 2 and 4 spent 5.5–6.5 hours, and Years 6, 8 and 10 students spent 5.5–9 hours in sedentary behaviours.

Older children were more sedentary, with students in Year 10 reporting twice the amount of time spent by Year K students in sedentary activities (Figure 15). There was little difference in week day sedentary time between boys and girls in Years K, 2 and 4, but boys in Years 6 and 10 spent significantly more time being sedentary than girls. Screen time (ie watching television, videos/DVDs and playing computer or video games) was the most common sedentary activity, occupying around half of all sedentary time.

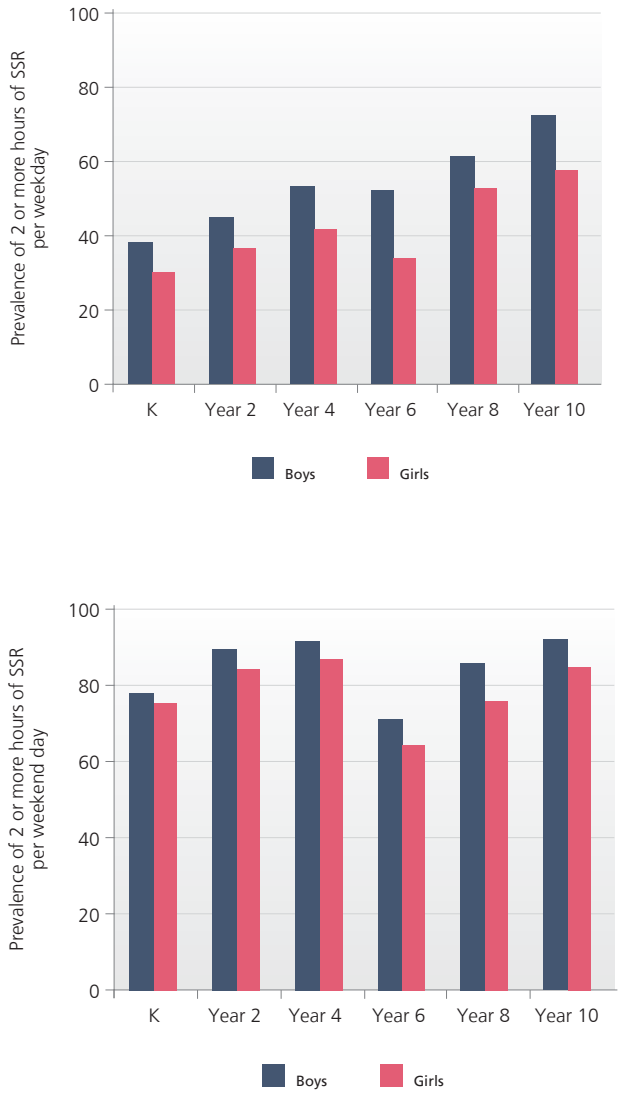
Figure 15: Median minutes spent in sedentary activities on a usual week day (upper panel) and weekend day (lower panel) among boys and girls by Year group.



Other findings include:

- Urban students were generally more sedentary than their rural peers (295 mins/day & 282 mins/day, respectively).
- Lower socioeconomic status background was associated with more hours of screen time for children in most age groups, especially on week days.
- Middle-Eastern students, particularly primary school boys and girls, were more sedentary on week days than their English-speaking background peers (281 mins/day & 209 mins/day, respectively).
- Among Year K children, obese boys and overweight girls spent significantly more time in sedentary activities on week days than their healthy weight peers.
- More than half (53.7%) of primary and about three quarters (74.5%) of secondary school students exceeded the recommended screen time guideline.
- One fifth of students in Years K and 2 (20.5%) and more than two fifths of Year 10 students had televisions in their bedrooms (42.0%), with the prevalence rising with age.
- Thirteen per cent of primary and 37% of high school students reported that their parents did not set rules on their television and electronic game use.
- About half the students in Years 6, 8 and 10 (47.7%) and half the parents of students in Years K, 2 and 4 were not aware of the recommended guideline for children's screen time.

Figure 16: Prevalence of spending two or more hours per week day (upper panel) and weekend day (lower panel) on small screen recreation (SSR) among boys and girls by Year group (%).



Trends

Overall, there was little change in total sedentary and screen time among students in Years 6, 8 and 10 between 2004 and 2010.

Summary

Time spent in sedentary behaviour outside of school hours increased across Year groups, and older boys tended to spend slightly more sedentary time than their female peers. A substantial proportion of children spent too much time on small screen recreation, especially on weekends. The evidence of adverse health effects means that increasing the number of children who meet the screen time guideline remains an important public health goal.

12

School's physical activity environment

Australian school children spend approximately 35 hours per week at school. For this reason, schools have been identified as a key setting for promoting healthy behaviours. The school's physical environment is considered a potential influence on students' physical activity through the provision of facilities and instructional opportunities.

Physical education lessons provide students with an opportunity to acquire new skills, interact with other students, potentially help promote self-esteem and self confidence, and develop a commitment to a lifetime of participation in physical activity.

Method

The school environment was defined as including:

- the physical environment: facilities and equipment
- school policies: time allocated for physical education and sport
- school practices: making facilities available, allocation of staff to teaching Physical Education and sport, barriers to participation and strategies to promote participation.

The Principal (or liaison teacher) was asked to complete a questionnaire seeking information on these aspects of the school environment.

For the analysis of schools' physical activity facilities, schools involved in the Australian Government's initiative *Building the Education Revolution* during the survey period were excluded, but all schools were included in the analysis of the remaining questions.

Results

Most primary and secondary schools have a wide range of facilities that could be used for physical activity, with little difference between urban and rural schools.

Most school staff felt physical education and sport were well supported by the school and parents.

About 70% of the primary schools surveyed allocated at least the recommended amount of time (120 minutes per week) for sport and physical activity. This included about 20% which allocated more than 150 minutes per week for physical education and sport.

More than 90% of secondary schools allocated at least two hours per week for physical education and sport, and just over 70% of schools allocated greater than 150 minutes per week for these activities.

The activities offered by primary and secondary schools for physical education and sport are many and varied. It is clear that, in NSW schools, many activities beyond the 'traditional' sports are available to students.

Schools have used many strategies to encourage students to be more physically active, such as providing encouragement or merit awards, allowing community organisations to use facilities outside school hours, involving students in decision making and using peer support programs in physical activity and remedial motor skills programs.

Schools reported that competing demands on curriculum time, lack of wet weather facilities and lack of available equipment were the strongest barriers to promoting physical activity. Among urban but not rural schools, the motivation and attitude of staff members and the absence of a quality physical education or sports program were strongly considered as barriers.

Trends

In general, the trends in time allocated for sport were generally positive. Schools have used a variety of strategies to encourage students to be more physically active. More primary schools, especially in urban areas, used external providers of physical education in 2010 than in 2004.

Summary

Schools in NSW appear to be attempting to make their environments and policies supportive of physical activity participation. Given the barriers to being physically active that have existed in schools such as a crowded curriculum, lack of equipment and facilities, it is clear that most schools have responded in positive ways, and are working to continue to provide physical activity opportunities for students.

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