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# Hoops, hurdles and high jumps: Physical activity and bodyweight among 17 year-olds

## Introduction

The prevalence of children and adolescents who are overweight has recently increased in importance as a public health issue in Australia. The past two decades have seen a rapid rise in the number of children who are overweight or obese, with no sign that this trajectory will plateau (McCallum & Gerner, 2005). Children and adolescents who are overweight are more likely to be overweight as adults and thus to be at increased risk of future health problems (Booth et al, 2001). This increase in the proportion of overweight children has been attributed to dietary changes, a lack of physical activity, increased sedentary lifestyle, increased television viewing and the use of computers (Alfano et al, 2002). In addition, with increased access to the Internet and mobile phones, children and adolescents need not even leave the home to maintain contact with their friends (ABS, 2001).

In response to these issues, the Australian Government has recently developed Physical Activity

Recommendations for Children and Young People (2006). These state that children and young people should participate in at least 60 minutes (and up to several hours) of moderate-to-vigorous intensity physical activity every day, and children and young people should not spend more than two hours a day using electronic media for entertainment, particularly during daylight hours (Department of Health and Ageing, 2006).

This briefing uses data from a sample of 17 year-olds in 2005 to report on their participation levels in sport and exercise, their health, their body mass index (BMI) and associations between these and other characteristics. The sample was part of the 2003 cohort of the Longitudinal Surveys of Australian Youth (LSAY), which comprised 10 370 15 year-olds. In 2005, cohort members responded to questions about their height and weight, physical activity and general health as part of the annual interviews. This briefing is based on responses from 7 664 cohort members. Seven per cent of male and 16 per cent

*LSAY Briefings is a series produced by the Australian Council for Educational Research (ACER), drawing on data from the Longitudinal Surveys of Australian Youth (LSAY), a research program managed jointly by ACER and the*

*Australian Government Department of Education, Science and Training. The aims of the series are to bring summaries of findings from LSAY research to a wider audience and to examine particular topics in brief. Related references, are listed at the end of the paper.*



## Longitudinal Surveys of Australian Youth BRIEFING

### HIGHLIGHTS

- Six out of ten young people play sport or exercise at least once a week, while a further one in four play sport or exercise every day
- Just over seven out of ten 17 year-olds rated their general health as either excellent or very good
- One in five 17 year-olds were classified as overweight or obese
- 30% of females were classified as underweight compared to 15% of males
- Three in four obese males played computer or video games at least once a week

of female cohort members did not respond to questions about height and weight.

For the purpose of this briefing, regular participation in sport or exercise was defined as participation in any sport or exercise activity at least once a week, including participation every day. Less frequent participation, such as once a month, was classified as irregular participation in sport or exercise. Relationships were examined using chi-squared analysis.

## Frequency of participation in regular sport or exercise

Twenty-five per cent of 17 year-olds in this group reported playing sport or doing regular exercise every day (males 29%, females 20%), while a further 60 per cent of 17 year-olds reported playing sport or regular exercise at least once a week but not every day (males 59%, females

62%). Data for another group of 17 year-olds interviewed in 2001 as part of the LSAY program showed that 83 per cent of 17 year-olds played sport or did regular exercise at least once a week (males 88%, females 79%). This represents a fairly stable participation rate over the last four years in the number of 17 year-olds reporting they play sport or do regular exercise. Participation by gender is shown in Figure 1.

Six per cent of 17 year-olds interviewed in 2005 reported never playing sport or regular exercise (males 4%, females 8%). In 2001, a similar proportion of 17 year-olds reported never playing sport or regular exercise (males 5%, females 9%).

Overall, there was no statistically significant difference between 17 year-olds who were still at school and those who were no longer attending school. However, irrespective of school attendance, a higher proportion of males reported playing sport or doing exercise on a daily basis than females.

## Body Weight - Body Mass Index

According to the National Health and Medical Research Council (NHMRC) guidelines, as shown in Box 1, 21 per cent of 17 year-olds within the LSAY cohort fall within the range of being overweight or obese, based on their self-reported height and weight, but this varied by gender. Another 22 per cent of 17 year-olds were underweight, and 58 per cent were within the normal weight range. As shown in Figure 2, the proportion of young females who were underweight was twice that of young males, and a somewhat greater proportion of young males than females were overweight or obese.

## Body mass index and participation in regular sport or exercise

Of young people who reported playing sport or doing exercise every day, 17 per cent were underweight, 62 per cent were within the normal

Figure 1 Distribution of 17 year-olds participating in regular sport or exercise

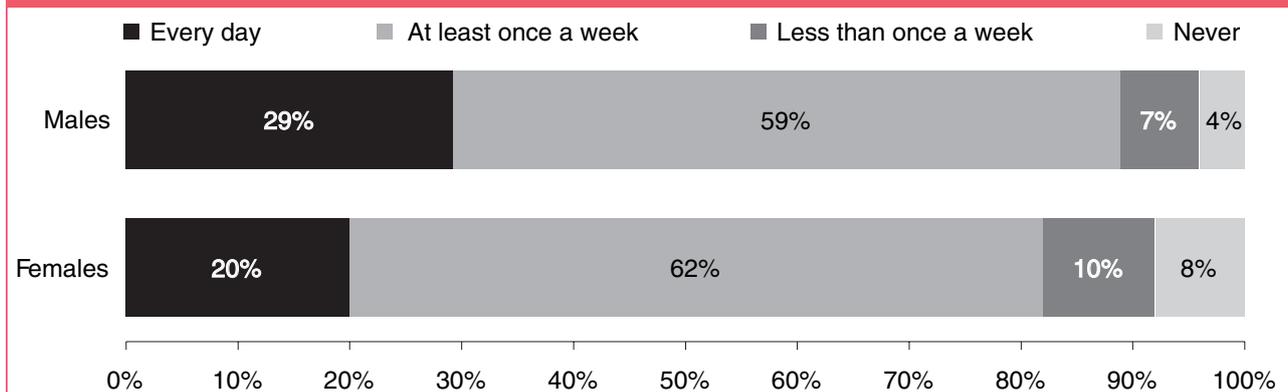
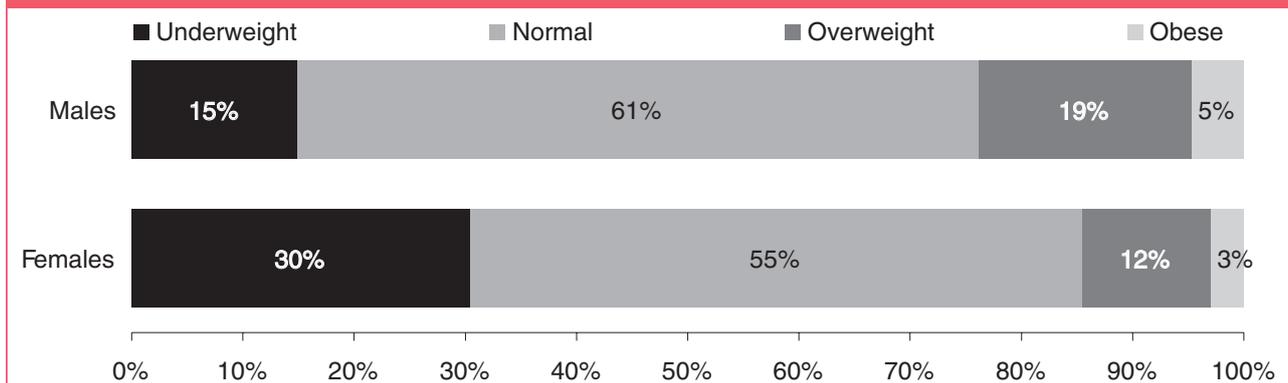


Figure 2 Distribution of 17 year-olds by Body Mass Index category



## Box 1 Calculating Body Mass Index (BMI)

The body mass index (BMI) is the ratio of weight in kilograms to the square of height in metres ( $\text{kg}/\text{m}^2$ ). BMI is used to categorise people into one of four groups: underweight ( $\text{BMI} < 18.5\text{m}^2$ ), normal weight ( $\text{BMI} 18.5\text{--}25\text{kg}/\text{m}^2$ ), overweight ( $\text{BMI} 25\text{--}30\text{kg}/\text{m}^2$ ) or obese ( $\text{BMI} > 30\text{kg}/\text{m}^2$ ).

The limitations of self-reported height and weight data are well recognised. In particular, respondents tend to under-report their weight and over-report their height, leading to an underestimation of the true prevalence of overweight and obesity. Also, self-reported height and weight depend on a respondent's knowledge of current height and weight, and these vary over time. Despite these limitations, BMI calculated from self-reported height and weight has proven useful for examining trends as well as the distribution of overweight and obesity across different subgroups (Dixon & Waters, 2003)

Source: NHMRC (2003)

range, 18 per cent were in the overweight range, and 3 per cent were in the obese weight range. Of those who reported not playing sport or doing regular exercise, 36 per cent were underweight, 48 per cent were within the normal weight range, 12 per cent were in the overweight range, and 4 per cent were in the 'obese range'.

Just over four in ten females who reported not playing regular sport or exercise were underweight, in contrast to 23 per cent of males. Twenty-six per cent of males who reported not playing regular sport or exercise were overweight to obese, in contrast to 12 per cent of females.

## General health

From self-reported ratings of health status, 72 per cent of 17 year-olds were in either excellent or very good health, while a further 22 per cent rated their health as good. Only six per cent reported their health to be either fair or poor. Self-reported health is shown in Figure 4.

## General health and participation in regular sport or exercise

A statistically significant association was found between 17 year-olds who do not participate regularly in sport or exercise and self-reported general health status.

Seventy-five per cent of 17 year-olds who participate in regular sport or exercise rated their health status as excellent or very good, while 20 per cent reported their health as good. Only five per cent of those who regularly played sport or did exercise reported their health to be fair or poor. In contrast, 58 per cent of 17 year-olds who reported that they did not regularly participate in regular sport or do exercise rated their health as excellent or very good, while 29 per cent rated their health as good. Twelve per cent of 17 year-olds who did not regularly play sport or exercise rated their health as fair or poor.

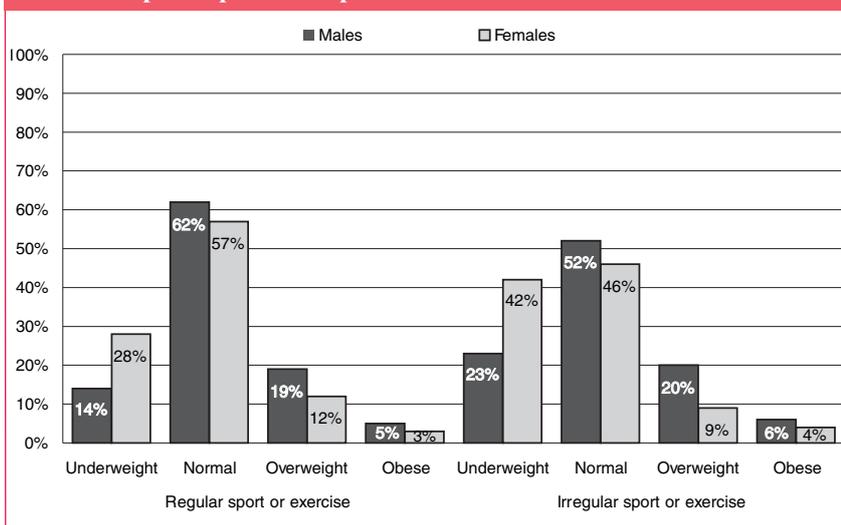
Overall, 17 year-olds who fell within the obese weight range were the least likely to report their health as being excellent or very good (57%), in comparison with 71 per cent and 76 per cent, respectively, for those falling within the underweight or normal weight ranges. Seventeen year-olds within the obese weight range showed a higher inclination to report their health as being fair or poor (11%) as did those who were underweight (8%).

## Socioeconomic status and participation in sport

A statistically significant association was found between socioeconomic status and participation in sport or exercise among 17 year-olds. Socioeconomic status was based on the PISA (2003) SES measure, which uses the higher status occupation of either the mother or father categorised into four groups: white collar-high skilled, white collar-low skilled, blue collar-high skilled, and blue collar-low skilled. Examples of occupations associated with these groups are shown in Box 2.

This relationship was due largely to the number of 17 year-olds who reported not playing regular sport or exercise who were in the white collar-low skilled category (17%). A statistically significant association was also found between body mass index category and SES category. This was due largely to the number of 17 year-olds who were obese and who came from blue collar-low skilled backgrounds (11%).

Figure 3 Distribution of 17 year-olds by BMI category and participation in sport or exercise



## Box 2 SES categories and examples of corresponding occupations

SES Category	Examples of occupations
White collar–High skilled	Professionals, administrators
White collar–Low skilled	Clerical, Service workers
Blue collar–High skilled	Tradespersons
Blue collar–Low skilled	Plant machine operators and assemblers

## Participation in other activities

Seventeen year-olds who were regular participants in sport or exercise tended to participate in a variety of other activities more frequently than 17 year-olds who reported not playing sport or doing exercise on a regular basis. This is consistent with Stratton, Conn and Smallacombe (2005), who found that moderate levels of participation in a range of activities do not seem to compete with each other and that some children and young people are

likely to be involved in a range of different activities.

## Use of the Internet and playing computer or video games

Overall, 17 year-olds who participated in regular sport or exercise also regularly participated in sedentary forms of activities, with 89 per cent regularly using the Internet and 41 per cent regularly playing computer or video games. Among non-regular participants, 82 per cent regularly used the Internet

and 32 per cent regularly played computer or video games.

While no statistical relationship was found between young people's BMI and regular internet usage (regular usage was quite high for all groups, at around 86%), a statistical association was found between BMI and the regularity of playing computer or video games. Higher proportions of young people in the obese and overweight groups reported playing computer or video games every day (60% and 47%, respectively) compared with their counterparts in the normal and underweight groups (39% and 33%, respectively).

Figure 6 shows the proportion of 17 year-olds playing computer or video games by body mass index category. Overall, more males than females regularly played computer or video games. The highest rate of regular playing of computer or video games was among obese males; this was also true for obese females.

Figure 4 Self-reported health status of 17 year-olds

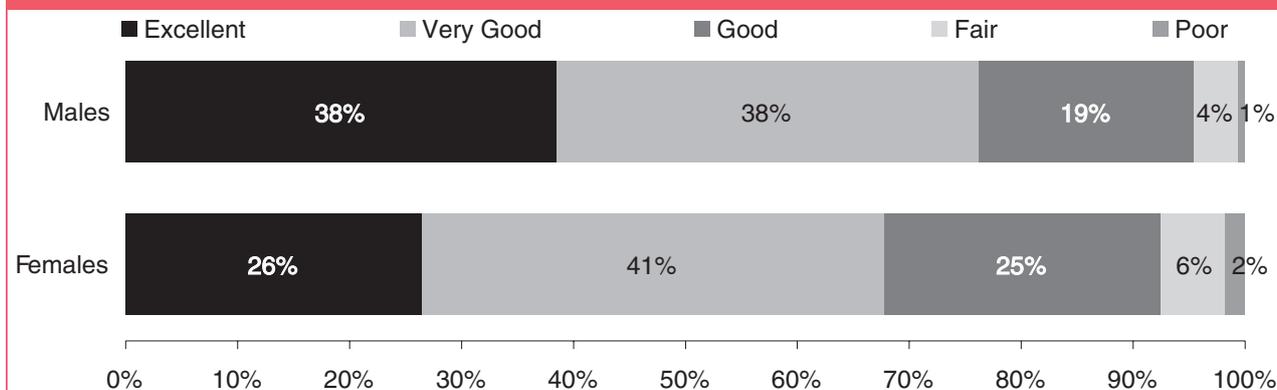
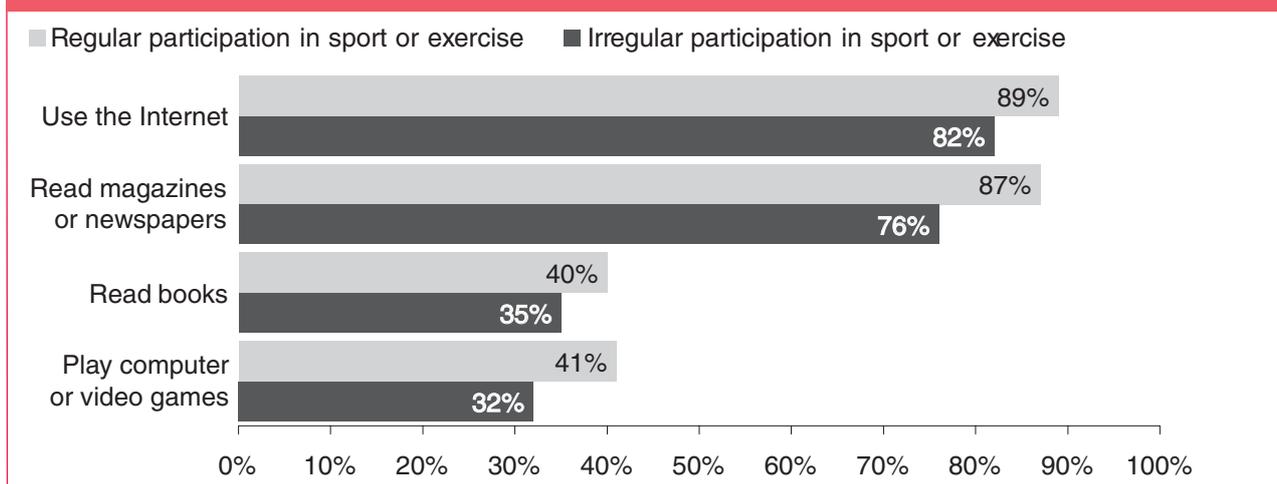
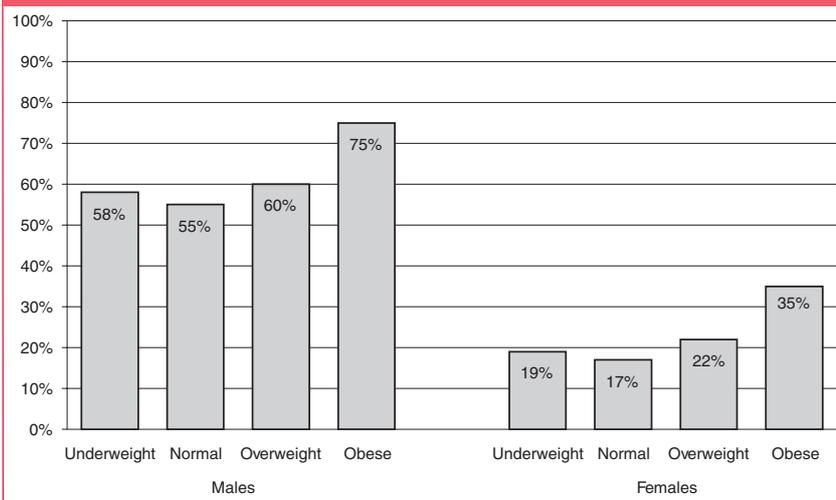


Figure 5 Participation in sedentary activities by regularity of sport or exercise



**Figure 6 Proportion of 17 year-olds regularly playing computer or video games, by body mass index category**



## Developing the healthy habit – participation in sport at 15, 16 and 17 years

Two years previously, when they were 15 years of age, this group of young people also provided information on the number of hours they spent playing sport or physical activity during a normal school week. At age 15, when all were still at school, only one quarter of these students were meeting the minimum requirement of participating in at least 60 minutes (and up to several hours) of moderate-to-vigorous intensity physical activity every day.

At age 15:

- Females were more likely than males to report spending either no time playing sport or doing exercise in a regular school week (14% and 9%, respectively).
- Females were more likely than males to spend between one and five hours per week playing sport or doing exercise during a normal school week (62% and 47%, respectively).
- Males were more likely to spend in excess of 6 hours per week playing sport or doing exercise than females (44% and 23%, respectively).

At age 15, a greater proportion of males than females were meeting the minimum requirements of at least 60

minutes (and up to several hours) of physical activity.

Of 15 year-olds who were classified as meeting the minimum requirements of sport and exercise participation, the vast majority were still regularly participating one year on at age 16: 97 per cent compared with 83 per cent of those who did not meet the requirements at age 15. Although those who did not meet the requirements at age 15 still reported quite high rates of participation at ages 16 and 17 (over 80% each year), their participation was not as high as those who were regular participants at age 15. In general, those 15 year-olds who maintained high rates of participation in sport and exercise at age 16 and 17 may represent a group of young people who have recognised they benefit from regular physical activity.

## Conclusions

Overall, while 85 per cent of young people reported playing regular sport or exercise, only 25 per cent reported playing sport or exercise on a daily basis. As such, of the 60 per cent who do play regular sport or exercise at least once a week it cannot be assumed that they are participating at a recommended level of intensity to realise benefits to their health in both the short term and the long term. On the positive side, 72 per cent of 17 year-olds rated their general health as either excellent or very good; however, of concern is the fact that

just over one-fifth of 17 year-olds had a body mass index placing them in the overweight to obese weight range. In addition, further concern is reflected by the 30 per cent of females who were in the underweight category.

The findings in this Briefing highlight the importance of the need for government, schools and parents to address a wide range of factors that are linked to childhood obesity and sporting inactivity. Young people who do not develop and maintain participation in sport and exercise from an early age may miss out on a range of benefits of such activity, apart from being at increased risk of developing weight problems. UNICEF (2003), among many, cite participation in sport as aiding the development of self-esteem, social skills, the ability to cope with pressure, resilience and improved alertness. In addition, regular sport and exercise aid concentration, and enhanced decision-making, and problem solving, all of which have a flow-on effect to enhanced academic performance. In general, the importance of sport and exercise to the physical, mental and emotional wellbeing of our young people across their lifespans needs to be highlighted at both an individual and societal level.

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### The Longitudinal Surveys of Australian Youth

The Longitudinal Surveys of Australian Youth (LSAY) is a research program jointly managed by ACER and the Australian Government Department of Education, Science and Training (DEST). Funding for LSAY is also provided by the Australian Education Systems Officials Committee (AESOC) through the National Fund for Educational Research.

The program includes more than 25 years of data on young Australians

as they move through school and into tertiary education, the labour market and adult life. LSAY commenced in its present form in 1995 with a national sample of Year 9 students. Another sample of Year 9 students was drawn in 1998, and a further sample of 15 year-olds was drawn in 2003. Data are first collected in schools, then by mail and telephone interviews.

Advice and guidance are provided by a Steering Committee, with representatives from DEST,

other Australian Government departments, AESOC, Chief Executive Officers of State and Territory training authorities, non-government schools, academics and ACER.

The data collected through LSAY are deposited with the Australian Social Science Data Archive for access by other analysts.

Further information on the LSAY program is available from ACER's Website, [www.acer.edu.au](http://www.acer.edu.au)



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