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and physical activity participation in
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Author's Declaration

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Junior Sport Framework (JSF) Project

Trends in sport and physical activity participation in Australian children and youth

Stewart G Trost PhD

1. INTRODUCTION

Adequate participation in physical activity during childhood and adolescence is considered essential for good health and normal growth and development. Among young people, the available evidence indicates that physical activity is associated with reductions in adiposity, favourable blood lipid profiles, and increases

The majority of young people in Australia participate in some form of organised sport. Yet it is noteworthy that nearly 1 in 3 young people do not participate in any organised sport.

in aerobic fitness, muscular strength, and bone mineral density. In addition, physical activity is associated with several psychological health benefits, including reductions in anxiety and depression, and improvements in academic performance (1-3). On the weight of this evidence, the Commonwealth Department of Health and Ageing recommended that: 1) Australian 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 (4).

For young people, participation in sport is a major source of health-enhancing physical activity (5-7). Hence, the prevalence of sports participation among young people has major public health implications. In Australia, efforts to promote sport and physical activity in young people have been hindered by the lack of population level monitoring and surveillance data. Indeed, since 1985, there have been only two studies assessing sport and physical activity participation in nationally representative samples of Australian school children. Nevertheless, surveys conducted by the Australian Bureau of Statistics (ABS) continue to provide valuable descriptive information regarding participation in sports and physical activities among Australian youth. However, it is important to note that these data are based entirely on parent

proxy reports and provide insufficient information to assess compliance with public health recommendations for participation in physical activity.

State level surveys, such as those conducted in New South Wales, Western Australia, and Queensland provide further population-level information about the prevalence of participation in sport and health-enhancing physical activity among young people. Of note, a number of state-level surveys have been administered on more than one occasion, thus providing valuable temporal trend data on sport and physical activity participation.

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2. NATIONAL LEVEL SURVEYS

2.1 Australian Health and Fitness Survey 1985

This survey (8) assessed physical fitness, physical activity, and other health-related parameters in a nationally-representative sample of Australian primary and secondary school children. The results indicated that sports participation was widespread with nearly all participants (86%) reporting participation in at least one sports team run by their school or community in the previous year. The mean number of sports played varied little by age and sex (on average, just over 2.5 teams per year). Despite the high prevalence of sports participation, only 38.3% to 50.6% of boys and 34.9% to 44.4% of girls reported participation in sustained vigorous physical activity (30 minutes at an intensity that made children “huff and puff”) three to four times a week. Within each age group, boys were more likely than girls to report regular sustained vigorous physical activity; however, no age-related trends were evident.

2.2 Australian National Children’s Nutrition and Physical Activity Survey

The 2007 Australian National Children’s Nutrition and Physical Activity Survey assessed participation in sport and physical activity in a representative sample of Australian school children between the ages of 9 and 16 years. Participants completed four 24-h use-of-time recalls; two via fact-to-face interviews and two via telephone interview. Physical activity data were collected using the Multimedia Activity Recall for Children and Adults (MARCA). This computerized self-report instrument allowed respondents to recall activities from the previous day using a segmented day approach with self-determined anchor points (e.g., before school, after lunch break etc.). Respondents selected from an extensive list of approximately 200 activities, which were broadly categorised into seven domains – inactivity, transport, sport and play, school, self-care, chores, and other.

Olds et al. (9) used data from the sport and play domain to describe sports participation in Australian youth. On average, children reported 43 minutes of sport daily, which accounted for nearly half (45%) of total MVPA minutes. Boys (55 mins/day) reported higher levels of sports participation than did girls (33 mins/day).

Participation rates varied with age, peaking at 12 years and 13 years for girls and boys, respectively. Beyond these ages, participation rates decline precipitously (approximately 50%) in both boys and girls. Children from the lowest socioeconomic stratum (income based) reported significantly lower participation in sport than did children from higher socioeconomic

position. Obese children (29 mins/day) reported significantly lower sports participation than did overweight children (43 mins/day) and children in the healthy weight range (44 mins/day).

2.3 ABS 1995 National Health Survey

Physical activity was assessed in a national sample of young people aged 15 to 24 years (10). Almost a quarter (23%) of Australian young people reported no physical activity whatsoever in the two weeks preceding the interview.

Approximately one-half (48%) of Australian young people reported walking for exercise in the previous two weeks. Of this group, 42% reported walking seven or more times in the previous two weeks, with 97% reporting an average duration of greater than or equal to 30 minutes per occasion.

Fifty-one percent reported participation in moderate-intensity physical activity in the two weeks prior to the interview. Of this proportion, about a quarter (26%) reported exercising moderately seven or more times in the previous two weeks, with 86% reporting an average duration of 30 minutes or more per occasion.

Almost one-third of young people in Australia reported participation in vigorous-intensity physical activity in the previous two weeks. Of this number, 20% reported exercising vigorously seven or more times in the previous two weeks, with just under 90% reporting an average duration of 30 minutes or greater per occasion.

2.4 ABS 1995-96 & 1996-97 Australian Population Survey Monitor

As part of the household-based Australia Population Survey Monitor, the ABS assessed participation in organised sports or physical activities in a nationally-representative sample of children aged 5 to 14 years (11). Data were provided by parents and not the children themselves.

Across all age and gender groups, 61.5% of Australian children participated in at least one organised sport or physical activity in the 12 months preceding the survey. Boys (65.0%) were more likely to participate in sports and physical activities than girls (57.8%). Children aged 9-11 years (71.0%) and 12-14 years (68.4%) were more likely than 5-8 year olds (49.2%) to participate in sport or physical activity. Across all age and gender groups, participation in club sports and physical activities was greater than school-based sports programs. For boys, the

three most commonly reported sports/activities were soccer, basketball, and swimming; while for girls, the three most commonly reported activities were netball, swimming, and basketball.

Children's participation in organised sports and physical activities was again examined in the 1996-97 ABS population monitoring survey, yielding almost identical results (12). Across all age and gender groups, 61.1% of Australian children participated in at least one organised sport or physical activity in the 12 months preceding the survey. Boys (64.7%) were more likely to participate in sports and physical activities than girls (57.4%). Children aged 9-11 years (70.4%) and 12-14 years (68.8%) were more likely than 5-8 year olds (48.7%) to participate in sport or physical activity. Across all age and gender groups, participation in club sports and physical activities was greater than school-based programs. For boys, the three most commonly reported sports/activities were soccer, Australian Rules football, and cricket; while for girls, the three most commonly reported activities were netball, swimming, and dancing.

2.5 ABS Children's Participation in Cultural and Leisure Activities 2000-09

As part of the household-based Monthly Population Survey, the ABS assessed young people's participation in cultural and leisure-time activities. Proxy reports of children's participation in organised sports were obtained from any responsible adult in the household. After its initial administration in the year 2000, the survey has been repeated every 3 years. The major findings from each administration are summarized below.

2000

In the 12-months prior to April 2000, 59.4% of Australian children aged 5 to 14 years were involved in organised sport outside of school hours. Participation was higher in boys (66.1%) than in girls (52.3%). Compared to children aged 5 to 8 years (51.0%) and 12 to 14 years (62.4%), participation in organised sports was highest among 9 to 11 year olds (67.3%). On average, boys participated in organised sport on 56 occasions over the past year, while girls participated in organised sport on 52 occasions over the corresponding period. Among boys, the most frequently played sports were soccer (19.6%), Australian Rules football (12.6%), swimming (13.1%), cricket (9.9%), and tennis (9.2%), basketball (8.8%). Among girls, the most frequently played sports were netball (18.2%), swimming (15.8%), tennis (7.7%), and basketball (6.3%) gymnastics (4.3%). Among the States and territories, participation rates were highest for Northern Territory (65.5%) and lowest for Queensland (56.1%) (13).

2003

In the 12-months prior to April 2003, 61.6% of Australian children aged 5 to 14 years were involved in organised sport outside of school hours. Participation was higher in boys (68.6%)

than in girls (54.2%). Compared to children aged 5 to 8 years (55.4%) and 12 to 14 years (63.6%), participation in organised sports was highest among 9 to 11 year olds (67.6%). On average, boys participated in organised sport on 56 occasions over the past year, while girls participated in organised sport on 52 occasions over the corresponding period. Among boys, the most frequently played sports were soccer (22.2%), Australian Rules football (13.6%), swimming (15.7%), cricket (9.1%), and tennis (9.5%), basketball (8.6%). Among girls, the most frequently played sports were netball (18.1%), swimming (17.5%), tennis (7.8%), basketball (6.9%) and gymnastics (5.4%). Among the States and territories, participation rates were highest for Western Australia (65.8%) and lowest for Queensland (54.1%) (14).

2006

In the 12-months prior to April 2006, 63.5% of Australian children aged 5 to 14 years were involved in organised sport outside of school hours. Participation was higher in boys (68.9%) than in girls (57.8%). Compared to children aged 5 to 8 years (58.0%) and 12 to 14 years (63.7%), participation in organised sports was highest among 9 to 11 year olds (70.2%). On average, boys participated in organised sport on 58 occasions over the past year, while girls participated in organised sport on 52 occasions over the corresponding period. Among boys, the most frequently played sports were soccer (19.6%), Australian Rules football (13.8%), swimming (16.5%), cricket (10.1%), tennis (8.0%), and basketball (7.4%). Among girls, the most frequently played sports were netball (17.3%), swimming (18.2%), tennis (6.6%), basketball (5.7%) and soccer (6.4%). Among the States and territories, Participation rates were highest for Australian Capital Territory (70.9%) and lowest for Tasmania (59.3%) (15).

2009

In the 12-months prior to April 2009, 63.1% of Australian children aged 5 to 14 years were involved in organised sport outside of school hours. Participation was higher in boys (69.6%) than in girls (56.3%). Compared to children aged 5 to 8 years (57.6%) and 12 to 14 years (64.8%), participation in organised sports was highest among 9 to 11 year olds (68.4%). On average, boys participated in organised sport on 52 occasions over the past year, while girls participated in organised sport on 50 occasions over the corresponding period. Among boys, the most frequently played sports were soccer (19.9%), Australian Rules football (16.0%), swimming (17.2%), cricket (9.7%), and tennis (9.4%), basketball (8.5%). Among girls, the most frequently played sports were netball (17.0%), swimming (19.8%), tennis (6.3%), and gymnastics (7.6%) soccer (6.2%) and basketball (6.3%). Among the States and territories, Participation rates were highest for Australian Capital Territory (71.3%) and lowest for Tasmania (57.5%) (16).

2.6 Temporal Trends in Sports Participation

The comparable assessment techniques used in the ABS population monitoring surveys described above provide a limited yet valuable opportunity to examine temporal trends in youth sports participation trends. Figures 1A through 1D below summarize sports participation data collected by six different ABS surveys conducted between 1995/96 and 2009.

Across age and gender groups, participation in organized sport has remained relatively stable at just over 60%, with a slight “dip” below 60% occurring in the year 2000. Since 1995, the prevalence of sport participation has been consistently higher in boys than in girls, with both gender groups showing a very slight increase in prevalence over the last decade. For both boys and girls, participation in sport is higher among children aged 9 years or older. In most, but not all survey years, the prevalence of sports participation was higher among 9-11 year olds than 12 to 14 year olds; however, the differences in participation levels were small.

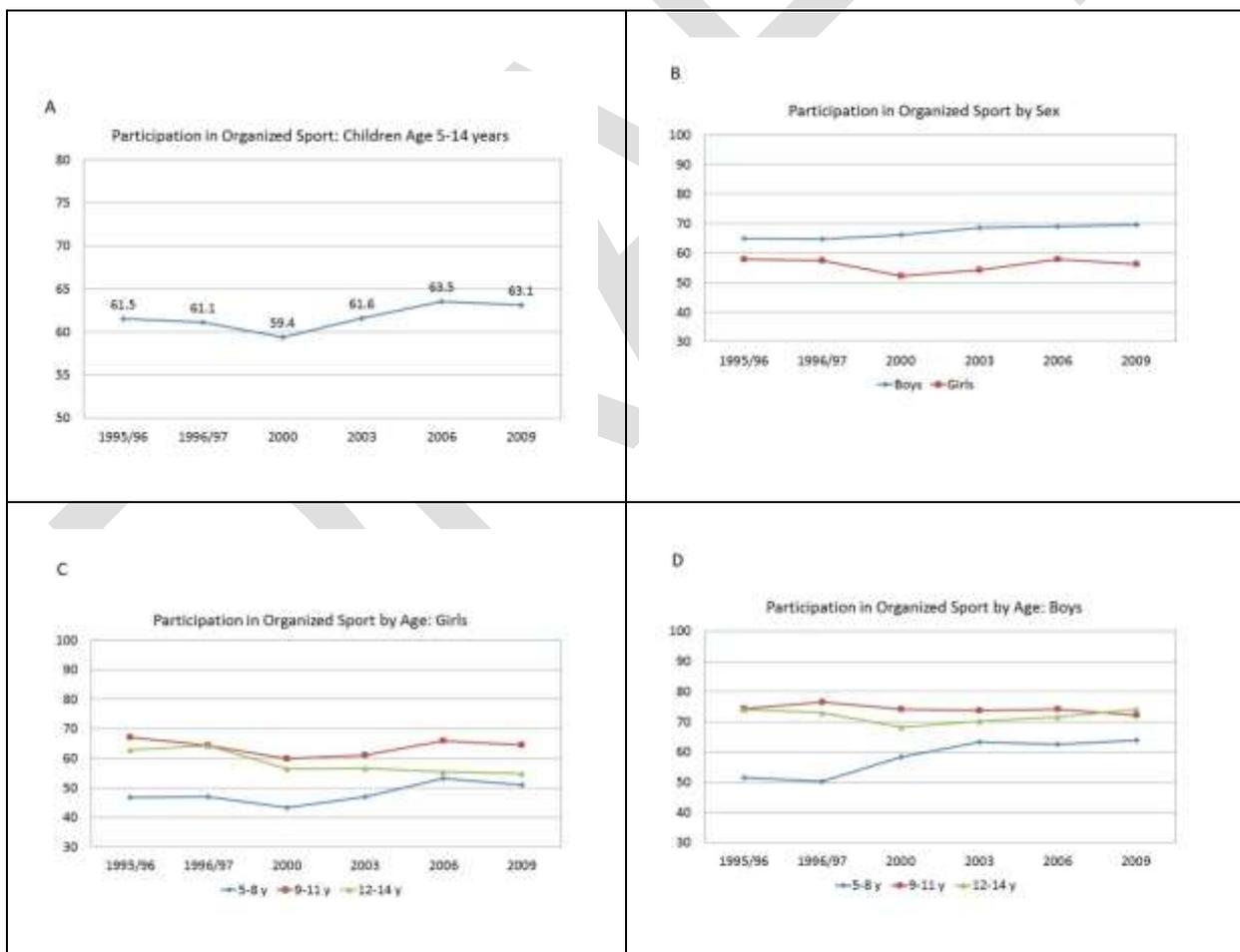


Figure 1 A-D - Temporal trends in sports participation among Australian youth aged 5 to 14 years. A. Overall participation rates. B. Participation rates by gender. C. Age-related differences in sports participation among girls. D. Age-related differences in sports participation among boys.

3. STATE AND REGIONAL SURVEYS

3.1 Australian Capital Territory Junior Sports Council Survey of Sports Participation 1992

In 1992, the Australian Capital Territory (ACT) Junior Sports Council conducted a survey of participation in sport by school-aged young people residing in the ACT (17). The sample consisted of approximately 80 students from each of the 13 grade levels (kindergarten through 12) in the ACT school system. One school was taken from each ACT schools sports association zone. Approximately one-third of the participating schools were independent schools. The final sample consisted of 525 boys and 523 girls (N=1048).

Approximately 53% (53.3%) of boys and 44% of girls reported representing their school in organised sport. A similar proportion of boys (54.1%) reported participation in club sports; however, club sport participation among girls was noticeably lower at 37.4%. The most frequently reported school sports were swimming (22%), netball (18%), soccer (18%), athletics (17%), softball (14%) and cricket (12%). With respect to playing sport for a community-based club, the most frequently reported sports were athletics (20%), soccer (19%), swimming (19%), aerobics/ gymnastics/ gym fun (18%), tennis (15%), netball (14%) and cricket (13%).

3.2 WA Ministry of Sport and Recreation Survey of Adolescents and Sport 1997

Taggart and Sharpe (18) assessed the prevalence of sports participation in 2,230 adolescents in grades 7, 8, 10 and 12 attending government and non-government schools in the Perth metropolitan area. Eighty-nine percent of the students surveyed reported participating in some form of organised sport in the 12-months preceding the survey. More boys (73%) than girls (58%) reported current participation in sport. For both boys and girls, participation declined with age, with the decline being greater in girls than in boys. Among boys, participation rates declined from 80% in Year 7 to 69% in Year 12. Among girls, participation rates declined from 81% in Year 7 to 45% in Year 12. For both boys and girls, the greatest decline in participation occurred between grades 7 and 8. Notably, nearly one-half of the total declines in sports participation observed in girls occurred between Year 7 and Year 8 (81% to 64%).

3.3 Healthy Kids Queensland Survey 2006

The 2006 Healthy Kids Queensland Survey (19) assessed weight status, dietary intake, and physical activity behaviour in a representative sample of Queensland school children in grades 1, 5, and 10. To evaluate whether students were meeting public health physical activity recommendations, students were asked to report the number of days in the past week on which they had engaged in physical activity or active play that caused their heart rate to rise or caused them to ‘huff and puff’. This was taken as an indicator of activity that was of a moderate or vigorous intensity (MVPA). In addition, students were asked about the types of physical activities in which they participated over the previous week and previous year. Students in Year 1 and Year 5 were provided with a list of 31 activities and sports, while student in Year 10 selected from a list of 35 activities and sports.

On average, students reported that they achieved the 60-minute MVPA target on three days of the previous week. The proportion of children who met the daily recommended level of activity decreased with age, and was higher amongst boys at all ages. The percentage of boys who were active for 60 minutes a day over the past week decreased from 16.5 % in Year 1 to 12.5% in Year 10 and in girls, from 6.3% in Year 1 to 4.8% in Year 10 (Figure 2).

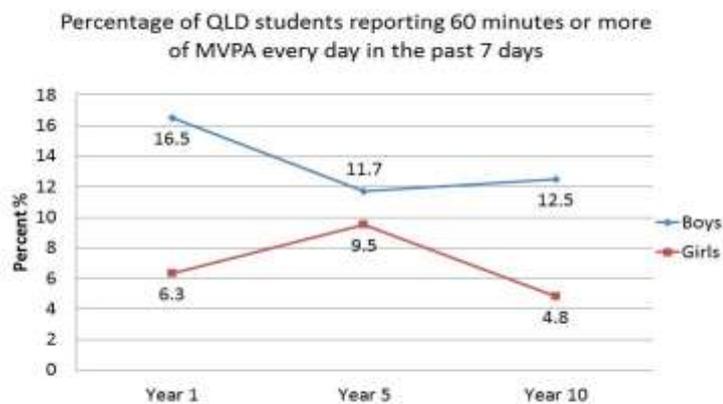


Figure 2 - Percentage of Queensland school children meeting Australian physical activity guidelines

The Table below outlines the five most commonly reported sports for Queensland boys and girls in Years 1, 5, and 10, respectively. Soccer, athletics, and tennis featured prominently across both genders and all grade levels. Among boys, participation in rugby league remained high across all grade levels. Touch football emerged as popular sporting activities among boys and girls in Year 10.

Table 1- Five most common reported sports fro Queensland boys and girls in Years 1 ,5 and 10

Year 1 Boys	Year 1 Girls	Year 5 Boys	Year 5 Girls	Year 10 Boys	Year 10 Girls
Soccer	Athletics	Soccer	Athletics	Soccer	Athletics
Athletics	Gymnastics	Athletics	Soccer	Touch Football	Touch Football
Rugby League	Soccer	Cricket	Netball	Athletics	Soccer
Tennis	Tennis	Rugby League	Tennis	Rugby League	Netball
Cricket	Basketball	Tennis	Basketball	Basketball	Tennis

3.4 New South Wales Schools Physical Activity and Nutrition Surveys

Periodic surveys of physical activity participation among school children in NSW were conducted in 1997, 2004, and 2010 (20-22). The 1997 survey conducted assessments in students from Years 8 and 10. The 2004 survey assessed physical activity behaviour in students in Years 6, 8, and 10, while the most recent survey conducted in 2010 assessed physical activity in students from Years K, 2, 4, 6, 8, and 10. Students in Years 6, 8, and 10 completed the Adolescent Physical Activity Recall Questionnaire or APARQ. This instrument required students to recall the frequency and duration of participation in organised and non-organised sports and physical activities during a “normal” week during the summer and winter school terms. For students in Years K, 2 and 4, parents were asked to report the time and frequency their child spent in organised and non-organised physical activity outside of school hours, separately for weekdays and weekend days.

Results from the 2010 survey indicated that less than two-thirds (63%) of students in Years 6, 8 and 10 met the Australian physical activity guideline during summer school terms, and only half (51%) met the guideline during winter school terms. Consistent with results of earlier administrations of the survey, physical activity levels were significantly higher among boys than among girls, while the prevalence of meeting the physical activity recommendations was consistently higher among students from high SES backgrounds compared to students from middle and low SES groups. Students from Asian cultural backgrounds and girls from Middle-Eastern cultural backgrounds were significantly less active than students from English-speaking backgrounds.

Less than half of Year K, 2 and 4 students met the current physical activity guideline for children. Only 44% of Year K students meet the guideline with the prevalence increasing to 49% among Year 4 students. Year K, 2 and 4 students from Asian and Middle- Eastern

cultural backgrounds were significantly less like to meet the guideline compared with English speaking students.

Although the surveys did not separate sports participation from overall physical activity participation, the results from multiple surveys administered between 1997 and 2010 provide valuable information related to temporal trends in physical activity participation among NSW junior and senior high school students.

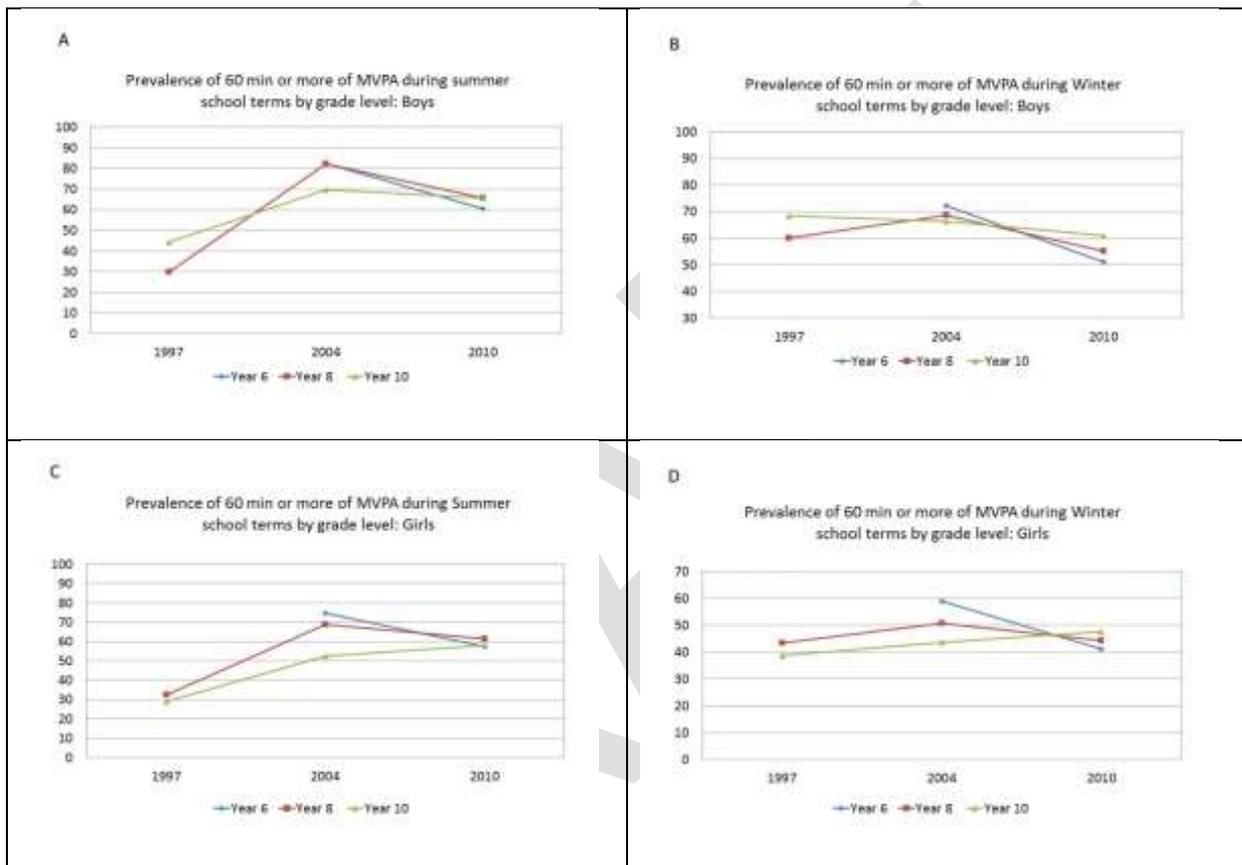


Figure 3A-D - Temporal trends in physical activity participation among NSW school children by season and gender.

Between 1997 and 2004, there was an increase in the proportion of students meeting the physical activity recommendation during the summer school terms. Similar increases were seen among boys and girls. In contrast, between 2004 and 2010, the prevalence of meeting the physical activity recommendation during the summer months decreased among all students. A similar trend was observed for physical activity during winter school terms.

3.5 Western Australian Child and Adolescent Physical Activity and Nutrition Surveys (CAPANS).

The 2003 Western Australian Child and Adolescent Physical Activity and Nutrition Survey (CAPANS) assessed sport and physical activity participation in a representative sample of students in school years 3, 5, 7, 8, 10, and 11 (23).

Sport and physical activity behaviour was measured via a questionnaire asking about physical activities undertaken in a typical week, activities levels while attending school (PE, recess, lunchtime), activities performed after-school and on weekends, and transportation to and from school. Different versions of the instrument were developed to accommodate developmental differences in recall ability.

Nearly all primary school children (> 95%) and most secondary school children (> 85%) reported participation in some form of school physical education or sport during a typical week. Approximately one in four secondary school boys and one in three secondary school girls reported doing no physical activity in a typical week. In primary school, less than one in seven students reported doing no sport, exercise or dance activities in a typical week.

For primary school boys, the five most commonly reported sports/activities were soccer, Australian Rules football, swimming, cricket, and basketball. For primary school girls, the five most commonly reported sports/activities were dancing, swimming, netball, basketball, and tennis. For secondary school boys, the five most commonly reported sports/activities were Australian Rules football, soccer, basketball, tennis, and cricket. For secondary school girls, the five most commonly reported sports/activities were dancing, netball, swimming, soccer, and basketball.

The 2008 CAPANS (24) administered a similar but slightly modified version of the physical activity questionnaire to a representative sample of Western Australian primary and secondary school students. Instead of asking about sports and physical activities performed during a “usual week”, the revised survey queried students on participation during the “last seven days.” Perhaps more significantly, the revised survey included an item asking students to recall the number of days out the last seven they had been physically active for 60 or more minutes. This latter modification enabled the investigators to evaluate compliance with existing public health recommendations for physical activity.

Among primary school students, 41.2% of boys and 27.4% girls reporting engaging in 60 minutes or more of physical activity daily. Among high school students, 37.6% of boys and 10.1% of girls reported engaging in 60 minutes or more of physical activity daily.

For primary school boys, the five most commonly reported sports were soccer, swimming, cricket, Australian Rules football, and basketball. For primary school girls, the five most commonly reported sports/activities were dancing, swimming, athletics, basketball, and soccer. For secondary school boys, the five most commonly reported sports/activities were basketball, soccer, Australian Rules football, tennis, and athletics. For secondary school girls, the five most commonly reported sports/activities were dancing, basketball, soccer, tennis, and swimming.

4. CONCLUSIONS - WHAT WE KNOW

The available data, although limited, indicate the following:

- The majority of young people in Australia participate in some form of organised sport. Yet it is noteworthy that nearly 1 out of 3 young people do not participate in any organised sport.
- The prevalence of sport participation among young people over the last 15 years has remained relatively stable at just over 60%.
- There is consistent evidence that sports participation is higher in boys than girls and that participation declines with age, more so in girls than boys.
- The prevalence of sports participation tends to peak between the ages of 9 and 11 years.
- Sports participation is lower among children and adolescents from low socioeconomic backgrounds
- Participation appears to lower in young people from non-English speaking backgrounds, in particular, young people from Asian and Middle-eastern cultural backgrounds.
- Significant proportions of Australian youth do not meet government recommendations for participation in physical activity.
- Challenges related to the assessment of physical activity in young people and methodological differences across surveys preclude definitive statements regarding temporal trends in physical activity participation.

5. ADVICE TO THE ASC

- The establishment of a valid, yet cost effective surveillance system that routinely assesses sport and physical activity participation in a nationally representative sample of Australian children and adolescents continues to be a priority.
- National and state-level surveys should incorporate more rigorous objective measures of physical activity, such as accelerometry. Reductions in the cost of accelerometers and advances in accelerometer data reduction techniques makes the proposition of including accelerometers or other wearable monitoring devices in a population-based survey more feasible.
- Current information on age-related trends in sport and physical activity is based almost entirely on cross-sectional data. Hence, longitudinal studies monitoring physical activity and sports participation in representative cohorts of Australian youth are needed.
- Decision makers in education and public health should continue to devise, test, and/or translate effective policies and practices that address the gender gap in sports and physical activity participation.
- Effective programs and policies that promote sport and physical activity participation among young people from non-English speaking backgrounds, particularly among girls, are needed.
- Agencies should consider policies such as subsidizing sporting club membership and other costs associated with sports participation (transportation fees, uniforms etc.), which may encourage participation in sport among children and adolescents from socioeconomically disadvantaged households.

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