



METHODOLOGY FACT SHEET NO. 4

Results from the Western Australian Child and Adolescent Physical Activity and Nutrition Survey (CAPANS) 2003

Anthropometric Procedures



In 2003, the Premier's Physical Activity Taskforce, Healthway and the Department of Health commissioned the University of Notre Dame Australia to undertake a Statewide survey to collect baseline data on child and adolescent physical activity behaviours, eating patterns and physiques.

This fact sheet describes the procedures specific to the anthropometric component of the study, including description of survey tools, survey process and treatment of data. For information on general CAPANS methodology, refer to the fact sheet 'CAPANS Methodology – General Procedures'. For specific technical information and additional information relating to the anthropometric components, please refer to the supplementary CAPANS Physical Activity Technical Report.¹

SURVEY SAMPLE

- The study sample for the **anthropometric data** consisted of 1,835 children. Of the sample, 52% (n = 959) were male and 48% (n = 876) female.
- The anthropometric sample size is smaller than the total study sample of 2,275 children and adolescents as 15.3% of males and 23.3% of females did not consent to participate in the anthropometric component of the survey.

MEASURES OF HEIGHT, WEIGHT AND WAIST GIRTH

Measures of **height**, **weight** and **waist girth** were recorded with only one participant in the room at a time. No coercion was used if a student decided they did not wish to be measured. Refusal was recorded on the data sheet. All measures were entered into a Microsoft Access™ Database.

HEIGHT

- A Mentone Educational Portable Height Scale (PE87) stadiometer was used to measure height.¹ Participants were measured:
 - without shoes, feet together flat on the centre of the base plate, and heels against the rod;
 - with their back as straight as possible, arms hanging loosely by their side, palms facing forwards;
 - with their head moved so that the **Frankfort Plane** was in a horizontal position (parallel to the floor); and
 - were asked to focus straight ahead and breathe in deeply before a measure was taken.
- Two measures to the nearest 0.1 centimetre (cm) were taken and a third measure was taken if measures differed by 0.5cm or more. Measurements that fell between two millimetres were recorded to the nearest even millimetre.

Treatment of Data

If two measurements were taken, then the value was the average of the two measurements. If three measurements were taken, then the value was the average of the two closest measurements.²

WEIGHT

- An A&D Personal Precision Scale UC-321 was used to measure weight.¹ The scale was placed on a hard, even surface.
- Participants were weighed with one single layer of light clothing (e.g. shorts, T-shirt or sports top) and without shoes. Heavy jewellery or heavy items (e.g. coins) were removed.
- Participants stood squarely on the scale, feet together, arms hanging loosely at their side and head facing forward, remaining still until asked to move.
- One single measure was taken to the nearest 0.1 kilogram (kg).

Treatment of Data

Some corrections were necessary for clothing effects such as jeans or tracksuits. These were established by weighing an example of each item, and adjustments made after initial data entry (details in the CAPANS Physical Activity Technical Report¹).

WAIST GIRTH

A KDS Steel Measurement Tape (PE93) was used to measure waist girth. Measures were taken using two protocols: Waist Girth Umbilicus and Waist Girth 10th Rib and Iliac Crest.

- Waist Girth Umbilicus follows the protocol for the 1985 Australian Health and Fitness Survey³ where the measure was taken at the level of the umbilicus.
- The 10th rib and iliac crest protocol follows the current practice and is taken midway between the 10th rib and the iliac crest.⁴

For participants who were reluctant for the measure to be taken against their skin, the measure was taken over a single layer of clothing and noted on the data sheet. Two measurements were recorded for each protocol to the nearest 0.1cm, with a third measure taken if measures differed by 0.5cm or more.²

Treatment of Data

- When the measure was taken over a single layer of clothing, as coded on the data sheet, a correction of 0.5cm was made to the measure prior to analysis.⁵
- Where two measurements were taken, the value was the average of the two measurements. If three measurements were taken, the value was the average of the two closest measurements.



BODY MASS INDEX

- **Body Mass Index (BMI)** was derived for each student. This is a weight to height ratio (kg/m²) widely used as a means of identifying the overweight and obese.
- A standard definition of overweight and obesity for children using the **BMI cut-points** has been internationally accepted.⁶
- These cut-points take into account both age and sex, which is important as both height and weight are age and sex dependent during childhood and adolescence.
- Based on these cut points, students were categorised as acceptable, overweight or obese.
- The cut-point for overweight and obese was taken as the mid-year point for each age, that is, if 7 years of age, the 7.5 cut point was used, if 8 years of age, the 8.5 cut-point was used (Table 1).

Table 1. Weight Category Cut-Points⁶

Age (Years)	Body mass index equivalent to 25kg/m ² in adults (overweight)		Body mass index equivalent to 30kg/m ² in adults (obese)	
	Males	Females	Males	Females
7.5	18.16	18.03	21.09	21.01
8.5	18.76	18.69	22.17	22.18
9.5	19.46	19.45	23.39	23.46
10.5	20.20	20.29	24.57	24.77
11.5	20.89	21.20	25.58	26.05
12.5	21.56	22.14	26.43	27.24
13.5	22.27	22.98	27.25	28.20
14.5	22.96	23.66	27.98	28.87
15.5	23.60	24.17	28.60	29.29
16.5	24.19	24.54	29.14	29.56

AUSTRALIAN PHYSICAL ACTIVITY RECOMMENDATIONS FOR CHILDREN (5-12 YEARS) AND YOUTH (12-18 YEAR S)

1. Children and youth should participate in at least 60 minutes (and up to several hours) of **moderate** to **vigorous intensity** physical activity every day.
2. Children and youth should not spend more than 2 hours per day using electronic media such as TV, computer games and the internet for entertainment, particularly during daylight hours.

ACKNOWLEDGEMENTS

Recommendations for increasing the levels of physical activity in children as well as other key findings can be found in the CAPANS report⁷ at www.patf.dpc.wa.gov.au or by contacting the Physical Activity Taskforce Secretariat on 9382 5980.

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- 1 Hands, B., Parker, H., Glasson, C., Brinkman, S. & Read, H. (2004). *Results of Western Australian Child and Adolescent Physical Activity and Nutrition Survey 2003 (CAPANS): Physical Activity Technical Report*. Perth, Western Australia: Western Australian Government.
- 2 Australian Bureau of Statistics. (1998). *National Nutrition Survey: Nutrient Intakes and Physical Measurements, 1995*. Cat. No. 4805.0, Canberra: ABS.
- 3 Pyke, J. E. (1987). *Australian Health and Fitness Survey 1985*. Parkside, SA: Australian Council for Health, Physical Education and Recreation.
- 4 World Health Organisation. (1995). *Physical Status: The Use and Interpretation of Anthropometry: A Report of a WHO Expert Committee*. Geneva: World Health Organisation.
- 5 McCarthy, H.D., Ellis, S.M., & Cole, T.J. (2003). Central overweight and obesity in British youth aged 11-16 years: cross sectional surveys of waist circumference. *British Medical Journal*, 326(7390), 624. Retrieved March 21, 2003 from <http://bmj.com/cgi/content/full/326/7390/624>.
- 6 Cole, T. J., Bellizzi, M. C., Flegal, K. M., & Dietz, W. H. (2000). Establishing a standard definition for child overweight and obesity worldwide: international survey. *British Medical Journal*, 320, 1240-1243.
- 7 Hands, B., Parker, H., Glasson, C., Brinkman, S. & Read, H. (2004). *Physical Activity and Nutrition Levels in Western Australian Children and Adolescents: Report*. Perth, Western Australia: Western Australian Government.

