Report for the

Tasmanian Premier's Physical Activity Council

Physical Activity Surveillance in Tasmania: Current Status & Future Opportunities

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EXECUTIVE SUMMARY

This report provides a quality-based review of current population-based physical activity surveys in Tasmania. The Research and Planning Subcommittee of the Tasmanian Premier's Physical Activity Council identified surveys for review, which were assessed according to their internal and external validity characteristics. While a number of surveys met external validity criteria, few met internal validity criteria. From the studies assessed, there are limitations in knowledge about Tasmanian children's physical activity, and about adults' non-leisure time physical activity, such as occupational, commuting and household/yard activity. While many surveys provide information by sex and age group, few surveys provide information on specific subpopulations, such as those defined by socioeconomic group or race/ethnicity. This report highlights key gaps in physical activity surveillance methods in Tasmania. It also recommends a set of guiding principles for future population-based physical activity surveillance in Tasmania and presents potential surveillance options for consideration.

TABLE OF CONTENTS

PURPOSE

In June-July 2005, the Menzies Research Institute was commissioned by the Tasmanian Premier's Physical Activity Council to conduct a review of population-based physical activity research in Tasmania. The overall objective of this review was to examine the quality of recent population-based physical activity surveys conducted in Tasmania. Based on the findings of the review, the Menzies Research Institute was to determine whether data from existing surveys could be used to estimate the proportion of the Tasmanian population meeting current physical activity guidelines (1). Information from this review will serve to assist the Tasmanian Premier's Physical Activity Council in future planning for surveillance, evaluation and interventions in Tasmania.

BACKGROUND & AIMS

While the terms physical activity, exercise, and fitness are often used interchangeably, a clear distinction exists. Physical activity is usually defined as "bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above the basal level" (2). Exercise, on the other hand, is a subset of physical activity that is planned, structured, and repetitive and is undertaken to improve or maintain physical fitness (2). Fitness is different again because it is "a set of attributes that are either health or skill related" and can be measured with specific tests (2).

Physical activity has four main dimensions: type, frequency, duration and intensity. The first of these dimensions, activity type, is often used to classify physical activity into one of the following domains (3):

- Leisure time [including sport]
- Transportation-related [including commuting]
- Household or yard
- Occupational

The remaining dimensions (frequency, duration and intensity) can be used to quantify physical activity, either in units of energy expenditure (for example, metabolic equivalents or METs), or in units of time spent at different activity intensity levels.

Activity that occurs outside of leisure time is sometimes referred to as incidental activity. Incidental activities are those activities that occur as part of daily life, such as retrieving the post or walking up the stairs. As these types of activity are difficult to recall, they are usually not assessed by questionnaire but can be captured using objective measures of physical activity, such as motion sensors.

An additional concept is physical inactivity, often estimated by participation in sedentary behaviours such as sitting, television viewing and computer usage. Sedentary behaviours are often well recalled and have been shown to correlate well with various health outcomes in both children and adults (4-9).

A large body of research has identified physical activity as an important modifiable behaviour that is significantly associated with a range of health outcomes including all-cause mortality (10-13), cardiovascular disease (14-17), type 2 diabetes (18-22), overweight and obesity (23-30), and some forms of cancer (31-35). Accordingly, National Physical Activity Guidelines for Australian Adults (1) have been developed which recommend accumulating at least 30 minutes of moderate-intensity physical activity on most, but preferably all, days of the week. These guidelines stress that health benefits can be achieved by increasing participation in a range of lifestyle activities and can be easily incorporated into work, family, community or social life. Specific guidelines for Australian children aged 5-18 years have recently been developed (36). These stipulate that children should achieve at least 60 minutes per day of moderate to vigorous intensity physical activity, and should spend no more than two hours per day using electronic media such as television, computers and video games.

From a public health perspective, it is important to monitor physical activity levels in the population over time and to identify subgroups least likely to be sufficiently active so that intervention programs can be appropriately targeted and conducted efficiently and effectively. The need to monitor population levels of physical activity has increased in importance given the rising prevalence of overweight and obesity and concern that a decline in physical activity levels may be an important contributing factor. However, no systematic surveillance system exists in Australia to monitor trends in physical activity participation.

While a number of sport and physical activity surveys have been conducted at national and state levels, it is difficult to interpret these results due to differences in study design, sampling techniques, definitions of physical activity and measures of physical activity used. The overall objective of this report was to examine the quality of recent population-based physical activity surveys conducted in Tasmania and to determine whether data from existing surveys could be used to estimate the proportion of the Tasmanian population currently meeting physical activity guidelines. Specifically, this report aimed to:

- Examine existing physical activity population-based surveys that have been conducted in Tasmania
- Identify gaps relating to population-based physical activity surveillance in Tasmania
- Provide recommendations to the Premier's Physical Activity Council (PPAC) on surveillance and planning needs and issues in Tasmania

PROCESS

A quality-based critical review of population-based physical activity surveys administered, at least in part, in Tasmania was conducted. Surveys evaluated for inclusion in this review were those identified by members of the Premier's Physical Activity Council Research and Planning Subcommittee in June 2005. The primary goal of this review was to evaluate the quality of information available regarding current levels of physical activity in the Tasmanian population; therefore only population-based surveys conducted from 2000 to 2005 were eligible.

Copies of each survey instrument and supporting documentation were obtained from the Premier's Physical Activity Council Research and Planning Subcommittee, relevant Internet websites or directly from the agency that administered the survey. Where a survey has been repeated, information from the most recent administration was used. Descriptive information was summarised for each survey including year of administration, survey region, reference period, collection agency, age range of respondents, type of physical activity measure, and mode of survey administration (Appendix #1). If available, the projected date for a future administration of a survey was also recorded.

Each survey was evaluated with the aim of assessing both its external (Appendix #2) and internal (Appendix #3) validity as a physical activity surveillance tool. Internal validity refers to the ability of a measurement instrument to accurately measure the characteristic or behaviour that it purports to measure. For this review, the behaviour of interest was participation in total physical activity, defined as any bodily movement that increases energy expenditure above resting levels, of sufficient quantity to meet current physical activity guidelines. Therefore, a survey tool was considered to have adequate internal validity if the following criteria were met:

- All domains of physical activity [leisure, occupational, commuting and household/yard] assessed
- The frequency, duration and intensity of physical activity participation were ascertained

The external validity of a survey refers to the methods used to obtain the study sample rather than the characteristics of the survey instrument itself, although the internal validity of the survey is a prerequisite for establishing external validity. Specifically, a survey with good internal validity can be considered to also have good external validity if the sample completing the survey is representative of the target population. While many factors can influence whether a sample is representative, the method of sample selection and participation rates are of particular importance. Therefore, the external validity of each survey was evaluated according to the following criteria:

- Sample selection methods used
- Response rate obtained
- Sample size in Tasmania (Table 1)

As a goal of physical activity surveillance is to identify subgroups at highest risk of inactivity, the ability of each survey to provide estimates for population subgroups was recorded. It was also noted whether the survey provided information on participation in sedentary behaviour. For surveys that utilised pedometers as an adjunct measure of physical activity, the brand of pedometer and number of measurement days were recorded (Appendix #4).

Table 1: Required sample size to estimate the population prevalence of *'sufficient physical activity'* - based on desired precision and the true proportion of the population sufficiently active

True Population Prevalence[1]	Level of Precision		
	±0.03	±0.04	±0.05
0.30	896	504	323
0.40	1024	576	384
0.50[2]	1067	600	384

[1]Sample size requirements for prevalence values above 0.50 will mirror those for prevalence values below 0.50 (i.e., sample size requirements for a population prevalence of 0.60 are identical to those for a population prevalence of 0.40)
[2]Sample size estimates are largest when the population prevalence equals 0.50

SUMMARY OF SURVEYS

Ten surveys were identified that met the inclusion criteria for this review[1]. Of these, most were national surveys, with the exception of the Tasmanian Government School Student Participation survey, the Tasmanian Older Adults Cohort study and the Tasmanian component of the Australian Diabetes, Obesity and Lifestyle study (37). All studies used questionnaires to estimate physical activity, with the Australian Diabetes, Obesity and Lifestyle Study and Tasmanian Older Adults Cohort studies also including pedometers as additional measures of physical activity. All questionnaires were interviewer-administered with the exception of the Australian Students Alcohol and Drug survey, which was a self-administered survey.

Participants were aged 15 or 18 years and over in most of the surveys reviewed. The Children's Participation in Cultural and Leisure Activities survey (38), the Australian Students Alcohol and Drug survey and the Tasmanian Government School Student Participation survey reported information on children and adolescents' physical activity, while the Tasmanian Older Adults Cohort study specifically focused on older adults aged 50-80 years.

Most national surveys had a sample size in Tasmania of more than 1000 participants, with the exception of the Active Australia survey (n=68) (39) and the Children's Participation in Cultural and Leisure Activities survey (n=267). The smaller number of participants in these two surveys makes it difficult to confidently estimate physical activity levels, particularly in subgroup analyses. Each study used a random selection component to select participants, except for the Tasmanian Government School Student Participation, which sampled all government schools in Tasmania. Response rates ranged from 45.3% in the Exercise, Recreation and Sport Survey Exercise, Recreation and Sport Survey (40) to 100% in the Tasmanian Government School Student Participation survey.

Of the surveys reviewed in this report, the majority provided information on the sex and age of participants. Some provided further information on marital status, education, occupation, employment status, main language spoken at home and

[1] Available on request

indigenous background, but these additional data were usually only available at the national level.

Many of the surveys reviewed will be re-administered in the future, including the Tasmanian Older Adults Cohort in 2005 (currently underway), the General Social Survey (41), the Exercise, Recreation and Sport Survey and the Children's Participation in Cultural and Leisure Activities in 2006, and the Australian Students Alcohol and Drug survey in 2008. The National Health Survey (42) has been repeated in 2002 and 2005, with results due for release late 2005 and early 2006. In addition, a follow-up of the Australian Diabetes, Obesity and Lifestyle Study is currently being conducted, however, this study is following the same cohort of participants and therefore will not be able to assess trends over time across the population.

Of all the surveys assessed, the instrument used in the Tasmanian Older Adults Cohort study provided the most comprehensive information about total physical activity. This instrument collected information on the frequency, duration and intensity of physical activity across leisure, household, commuting and occupational domains of activity. However, this study was limited to older adults in Southern Tasmania and is unlikely to be generalisable to the Tasmanian population as a whole.

The National Health Survey, the Active Australia Survey and the Australian Diabetes, Obesity and Lifestyle Study collected information on the frequency, intensity and duration of leisure time physical activity, which has previously been used as a surrogate measure of overall physical activity. None of the other reviewed surveys collected information of sufficient detail to estimate time spent in physical activity of at least moderate intensity. However, the Active Australia Survey had a very limited sample size in Tasmania and consequently state-based population estimates of physical activity cannot be derived. Therefore, only the National Health Survey and the Australian Diabetes, Obesity and Lifestyle Study (which used the same instrument as the Active Australia Survey) surveys have the potential to estimate compliance with physical activity guidelines.

The Active Australia Survey, the Australian Diabetes, Obesity and Lifestyle Study, the Children's Participation in Cultural and Leisure Activities survey and the Tasmanian

Older Adults Cohort survey also collected information on sedentary behaviour, such as television viewing and sitting, which may provide useful estimates of physical inactivity.

Three studies attempted to measure children's physical activity but were subject to substantial limitations. The Tasmanian Government School Student Participation survey achieved an excellent response rate but failed to collect information on the frequency and intensity of physical activity or the amount of time spent in physical activity. In addition, no standardised protocol was used to collect data, which likely led to inconsistencies in the methods chosen by administering teachers. Further, this survey did not provide a physical activity reference period, which may have led to wide variability in how the survey items were interpreted. The Children's Participation in Culture and Leisure Activities survey also had a very good response rate, but was limited to information about organised sport and leisure activities. Also, physical activity information was obtained by proxy from parental respondents, which has been shown to correlate poorly with children's objectively measured physical activity (43). Finally, interpretation of the Australian Students Alcohol and Drug survey is limited by ambiguity regarding the types of activities being assessed. In addition, response categories were dichotomised making it difficult to accurately estimate time spent in physical activity.

GAPS IN SURVEILLANCE TOOLS

By and large, current surveillance surveys focus on sports and exercise activity as a surrogate indicator of total physical activity. These types of activity are generally planned, episodic, and discrete in duration; features that are likely to improve the accuracy of information obtained. However, such surveys are likely to underestimate true physical activity levels, especially among women, older adults, and those with physically demanding occupations. For example, the 1998 NSW Health Survey demonstrated that excluding household chores and gardening reduced the proportion of people meeting physical activity guidelines by approximately 12% (44). Similarly, the proportion of participants classified as sufficiently active increased from 26% to 45% when the Behavioural Risk Factor Surveillance System in the United States was expanded to assess more lifestyle activity domains (e.g., household, transportation) (45).

In addition to underestimating the prevalence of activity, existing surveys appear to be limited in their ability to track changes in activity over time in the Tasmanian population. This is due, in part, to the substantial error inherent in estimating a complex behaviour, such as physical activity, by participant report. Another factor is the relatively small number of Tasmanians who are included in most of the national surveys, which leads to estimates with wide margins of error. The above factors, along with the focus on sports and exercise activity, suggest that existing surveys are unlikely to be adequate for monitoring the effectiveness of campaigns to increase physical activity participation by promoting incidental and lifestyle activity.

The small number of Tasmanians included in national surveys of physical activity also limits the ability of these surveys to identify those population subgroups least likely to meet physical activity guidelines. In addition, several existing surveys failed to obtain relevant information regarding socioeconomic status and place of residence (e.g., urban or rural). This information is needed in order to make informed decisions on where resources should be targeted to promote increased physical activity.

A key finding of this review was the absence of any acceptable surveillance mechanism for monitoring the physical activity levels of children and young

adolescents. Monitoring physical activity levels in these age groups is important to determine whether hypothesised declines in physical activity are being initiated in childhood and whether trends in activity levels may help explain the increasing prevalence of overweight and obesity among children (46). Obtaining adequate physical activity information for children is made difficult due to the sporadic and spontaneous nature of children's movement and the inability of many children, particularly those under the age of 9 years, to accurately and reliably self-report their physical activity (47).

OPTIONS TO IMPROVE SURVEILLANCE

As National campaigns focus on ways to increase lifestyle physical activity rather than sports and exercise, current surveillance measures may be poorly suited to monitor the effectiveness of these campaigns. However, it is important that states and territories have the ability to compare estimates of compliance. Large changes in the types of physical activity included in surveillance tools will make it difficult to utilise previously collected data to evaluate trends over time. Therefore, it may be desirable to have a "wash-in" period where both new and old surveys are administered, or new surveys could incorporate old survey questions.

Future initiatives to improve the surveillance of physical activity levels among Tasmanians should be guided by the following principles:

1) A stable core of physical activity questions should be used over time;
2) The surveillance tool should include a subset of questions that are part of current national surveys of physical activity to allow comparison with other states;
3) Surveillance tools should be sensitive enough to distinguish modest changes in physical activity, including changes in incidental activity;
4) Surveillance systems should allow estimates of physical activity for important population subgroups, such as those defined by sex, age, and socioeconomic status;
5) Survey samples should be representative of the Tasmanian population and of sufficient size to generate the precise estimates needed to track changes in physical activity levels over time.

In addition to the above principles, decisions regarding the extent and frequency of physical activity surveillance in Tasmania will undoubtedly be made with due consideration of both cost and feasibility. Therefore, we present a series of options for the continued surveillance of physical activity levels among Tasmanian adults in ascending order of measurement precision as well as cost and complexity (Table 2). Due to the unique challenges associated with monitoring physical activity in children and young adolescents, surveillance options for this population subgroup are presented separately (Table 3).

Table 2: Options for Surveillance of Physical Activity in Tasmanian Adults

#	Option	Advantages	Disadvantages
1	Utilise existing & future data from the National Health Survey	• Regularly administered • Conducted by reliable body • Procedures & protocols in place • Low cost • Ability to make state/territory & national comparisons	• Incomplete assessment of total PA (no information on commuting, household/ yard or occupational PA) • Incidental PA not assessed • Very limited in ability to evaluate effectiveness of programs/interventions to increase lifestyle PA • Unable to evaluate PA levels in subgroups other than age & sex • Significant time delay between data collection & release of results
2	Support further administration of the Active Australia Survey with expanded sample of Tasmanians	• Previous administration • Ability to make national & some state/territory comparisons • Improves upon National Health Survey measure by assessing 'gardening/heavy yard work' activities • Potential for estimates of PA within relevant population subgroups	• Incomplete assessment of total PA (partial assessment of commuting & household PA - occupational PA not assessed) • Incidental PA not assessed • Currently unable to make state/territory comparisons (except NSW) due to insufficient sample sizes • Insecure funding
3	Add additional modules to the National Health Survey or Active Australia survey that assess household/ yard, occupational, & commuting activities	• More complete assessment of total PA • Ability to evaluate effectiveness of programs/interventions to increase lifestyle PA	• Reliability & validity of composite measure of total activity would need to be evaluated • Incidental PA not assessed • Cost associated with selection/ development of additional modules & validation study • Logistical & political challenge of adding modules to National surveys
4	Add an objective monitoring component (pedometers) to supplement PA survey data	• More accurate assessment of total PA including incidental PA • Provide more sensitive indicator of the effectiveness of programs/interventions to increase lifestyle PA • Not subject to potential for respondent bias	• Potential high cost • Public health cutpoints[2] not well defined • Greater participant burden • No comparable estimates for other states/territories

[2] The number of pedometer steps per day needed to achieve health benefits.

Table 3: Options for Surveillance of Physical Activity in Tasmanian Children & Young Adolescents

#	Option	Advantages	Disadvantages
1	Administer the Western Australia Child & Adolescent Physical Activity & Nutrition Survey (WA CAPANS) to sample of Tasmanian children	• Assesses multiple domains of physical activity • Provides estimate of the proportion of children meeting current PA guidelines • Allows comparison with Western Australia children • Collects information on barriers & motivations to participation in PA	• Substantial cost & logistical challenges • Self-administered questionnaire may be subject to large amount of error – especially for younger children • Not appropriate for children younger than grade 3 • Incidental PA not captured
2	Utilise pedometers to supplement WA CAPANS	• Would provide an objective & more accurate estimate of physical activity • Would capture incidental PA • Could estimate PA levels of younger children • Allows comparison with Western Australia children	• Cost & logistics • Public health cutpoints not well defined • Participant burden in completing pedometer diary • Potential for reactivity • Does not measure all PA (i.e. cycling, swimming, upper body activity) • Substantial non-compliance with protocol likely
3	Utilise accelerometers (rather than pedometers) to supplement WA CAPANS	• Would provide an objective & more accurate estimate of physical activity • Would capture incidental PA, • Could estimate PA levels of younger children • Allows comparison with Western Australia children • Capable of estimating activity intensity • Compliance can be objectively assessed	• High cost & logistics • Cutpoints[3] used to classify activity intensity not firmly established • Potential for reactivity (less than pedometer) • Compliance with wear schedule may result in incomplete data

[3] Threshold values used to classify each minute of accelerometer output into sedentary/light, moderate, or vigorous intensity categories.

SUMMARY

This report provided a quality-based assessment and summary of physical activity surveys conducted in Tasmania over the past five years. While a number of national and state-based physical activity surveys were identified, only a few are able to estimate the proportion of adult Tasmanians participating in physical activity. In addition, the reviewed surveys predominantly focus on sports and exercise physical activity, rather than total physical activity, which may lead to an underestimation of physical activity participation rates. None of the reviewed surveys were deemed suitable for the surveillance of children's physical activity levels.

Monitoring and surveillance of physical activity is important for the assessment of trends and for evaluation and targeting of interventions to increase physical activity. Towards this goal, guiding principles for future monitoring and surveillance of physical activity were proposed and a variety of surveillance options provided. These options range from utilising data from current national monitoring systems at a minimum to, ideally, the use of more comprehensive surveys in conjunction with objective measures of physical activity. It is hoped that the information contained in this report will facilitate discussion and informed decision making by the Premier's Physical Activity Council as it strives to implement a valid and reliable system of physical activity surveillance in Tasmania.

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APPENDIX 1 – DESCRIPTION OF TASMANIAN POPULATION-BASED PHYSICAL ACTIVITY SURVEYS

Survey	Year	Survey Region	Reference Period	Collection Agency	Age Range (years)	Type of PA Measure	Mode of Administration	Intention to Re-Administer
General Social Survey	2002	National (including Tasmania)	Past 12 months	Australian Bureau of Statistics	18+	Questionnaire	Interviewer administered	2006[1]
National Health Survey	2001	National (including Tasmania)	Past 2 weeks	Australian Bureau of Statistics	15+	Questionnaire	Telephone administration	2002[2], 2004-5[3]
Exercise Recreation and Sport	2001-2005[4]	National (including Tasmania)	Past 12 months	Australian Sports Commission and Territory Departments of Sport and Recreation (analysed by ABS)	15+	Questionnaire	Telephone interview (CATI) by AC Nielsen Research.	2006
Active Australia Survey	1997, 1999, 2000[5]	National (including Tasmania)	Last week	Australian Sports Commission, Australian Institute of Health & Welfare, & Commonwealth Department of Health & Aged Care	18-75	Questionnaire	Telephone interview by Hunter Valley Research Foundation	2005[6]
Australian Diabetes, Obesity & Lifestyle Study^	1999-2000	National (including Tasmania)	Last week	International Diabetes Institute	25+	Questionnaire (national) & pedometer* (subsample in TAS)	Interviewer-administered	2005[7]
Sport & Rec Tasmania 2001 Survey	2000	Tasmania	Past 12 months	Sport and Recreation Tasmania	16+	Questionnaire	Telephone interview by Enterprise Marketing & Research Services	No

Survey	Year	Survey Region	Reference Period	Collection Agency	Age Range (years)	Type of PA Measure	Mode of Administration	Intention to Re-Administer
Children's Participation in Cultural and Leisure Activities	2000 & 2003	National (includes Tasmania)	Past 12 months[8]; past 2 weeks[9]	Australian Bureau of Statistics (part of Monthly Population Survey)	5-14	Questionnaire	Interview of any responsible adult in household (80% telephone; 20% in-person)	2006
Australian Students Alcohol & Drugs Survey	2002, 2005	National (includes Tasmania)	Last week	The Cancer Council Tasmania (Tasmania component) in collaboration with national organizations	10-19 (Year 7-12)	Questionnaire	Self-administered (paper & pencil)	2008
Tasmanian Government School Student Participation Survey	2003	Tasmania	Uncertain	Tasmanian Department of Education	4-16	Questionnaire	Completed by school staff	No
Tasmanian Older Adults Cohort^	2002-2004	Tasmania (southern region)	Typical week in the past 12 months	Menzies Research Institute	50-80	Questionnaire & pedometer*	Interview-administered	2005-6

[1] This will be re-administered as the National Multipurpose Household Survey
[2] This data will be released in December 2005
[3] This data will be released early 2006
[4] Information provided is based on last available report from 2003
[5] Information provided is based on report from 2000
[6] Not confirmed
[7] The same cohort used so does not monitor trends in the population
[8] For frequency of organised sports
[9] For duration of selected leisure activities (e.g., bike riding, etc)
*Further information on pedometers is presented in Appendix #4
^ Please note that the purpose of these surveys was to assess physical activity as a risk factor for health outcomes, not physical activity monitoring and surveillance

APPENDIX 2 – SAMPLE CHARACTERISTICS OF TASMANIAN POPULATION-BASED PHYSICAL ACTIVITY SURVEYS

Survey	Sample Selection	Sample Size	Timing of Collection	Response Rate	Subgroups[1]
General Social Survey	One randomly selected individual from a randomly selected sample of private dwellings; dwellings selected using a multi-stage area sample	15,500 nationally; 1,800 in Tasmania	Mar – July 02	91% of dwelling (national)	Age, sex, marital status, education, occupation
National Health Survey (2001)	One randomly selected individual from a randomly selected sample of dwellings, selected using a multi-stage area sample	26,863 nationally; 1,166 in Tasmania (for 18+)	Feb 01-Nov 01	92% of dwellings	Age, sex
Exercise Recreation and Sport	Random survey stratified by State and Territory. Sampling frame is Electronic White Pages, one person randomly selected per dwelling.	13,644 nationally; 1,696 in Tasmania	Quarterly in February, May, August, and November	45.3% overall	Sex, age, marital status, education, employment status, postcode* For Tasmania: age and sex
Active Australia	Random sample of households selected from electronic telephone directory. Random adult within each household selected.	3,590 nationally; 68 in Tasmania	Last 2 weeks in Nov 2000	76%	Age, sex, language, marital status, education, occupation
Australian Diabetes, Obesity & Lifestyle Study	Stratified cluster sample drawn from 42 randomly selected Census Collector Districts across Australia (six in each of the six states & NT). Within each district, all homes were approached, and all usual residents 25+ years were invited to participate	11,247 nationally; 1,848 in Tasmania	May 99 – December 00	55% (national); 40% (TAS)	Age, sex, language, marital status, education, occupation
Sport & Rec Tasmania 2001 Survey	Proportional stratified sample with each local governmental area	9,853	1999-2000	64%	Age, sex, local government area,
Children's Participation in Cultural and Leisure Activities	Sample of all children 5-14 who were usual residents of private dwellings. Dwelling was the sampling unit. Some restrictions applied, including exclusion of those living in remote areas. Maximum of 3 children per household.	8,900 nationally; 267 in Tasmania	April 2003	95% of dwellings	Sex, age, family type, area of usual residence*

Survey	Sample Selection	Sample Size	Timing of Collection	Response Rate	Subgroups[1]
Australian Students Alcohol & Drugs Survey	Target population is all students in Years 7 to 12. Two-stage probability sample of 1) 30 junior and 10 senior secondary schools within strata of Government, Catholic, and Independent systems; and 2) random selection of 20 students each grade for Years 7-10 and 40 students each grade for Years 11-12.	Estimate 3,200 students in Tasmania	Not available	Not available	Sex, age, postcode, perceived academic ability, indigenous background, language at home
Tasmanian Government School Student Participation Survey	All government primary, combined, high, and special school in Tasmania completed survey. School is the unit of analysis.	All government schools	August 2003	100%	Data not available on individual level
Tasmanian Older Adults Cohort	Randomly selected from electoral roll (southern TAS)	1,066	Mar 02 – Sept 04	57.2%	Education, occupation, sex, age

[1] Information available for specific subgroups

* These breakdowns are for aggregate national data only. May be available for Tasmania by request.

APPENDIX 3 – INSTRUMENTS USED IN TASMANIAN POPULATION-BASED PHYSICAL ACTIVITY SURVEYS

Survey	Dimensions of PA				Domains of PA				Sedentary Behaviour	Comments
	T	F	I	D	L	C	H	O		
General Social Survey	✓	✓	×	×	✓	×	×	×		Collects information on physical activity for recreation, exercise or sport
National Health Survey	×	✓	✓	✓	✓	×	×	×		Collects information on walking, moderate & vigorous PA for leisure only. Categorises participants as sedentary, low, moderate, high exercise level. Some respondents appear to have included occupational activity in estimates. Activity level of persons 15-17 based on proxy report.
Exercise Recreation and Sport	✓	✓	×	×	✓	×	×	×		Collects information on participation in physical activity for exercise, recreation, and sport. Excludes coaching, refereeing, and activities related to work or household chores.
Active Australia	~	✓	✓	✓	✓	~	~	×	TV viewing	Only walking included as commuting activity; only vigorous household PA included
Australian Diabetes, Obesity & Lifestyle Study	~	✓	✓	✓	✓	~	~	×	TV viewing	Identical to Active Australia questions. Only walking included as commuting activity; only vigorous household PA included
Sport & Rec Tasmania 2001 Survey	✓	×	×	×	✓	×	×	×		Collects information on participation in physical activity for exercise, recreation, and sport.
Children's Participation in Cultural and Leisure Activities	✓	✓	×	✓	✓	×	×	×	TV/video, computer or e-games	Restricted to organised sport and leisure activities performed outside of school hours
Australian Students Alcohol & Drugs Survey	×	✓	✓	~	~	~	~	×		Duration information is dichotomous in nature (# days of moderate or vigorous activity for ≥60 min). Some respondents may have included occupational activity.

Survey	Dimensions of PA				Domains of PA				Sedentary Behaviour	Comments
	T	F	I	D	L	C	H	O		
Tasmanian Government School Student Participation Survey	×	×	×	✓	✓	×	×	×		Duration of leisure physical activity outside school hours collected in aggregate form by classroom. Limited validity.
Tasmanian Older Adults Cohort	×	✓	✓	✓	✓	✓	✓	✓	Sitting or reclining	

T: type; F: frequency; I: intensity; D: duration; L: leisure; C: commuting; H: household/yard; O: occupational

✓ Yes, information included

× No, information not included

~ Some, but not all, information included

APPENDIX 4 – TASMANIAN POPULATION-BASED PHYSICAL ACTIVITY SURVEYS THAT HAVE USED PEDOMETERS

Survey	Brand of Pedometer	Days of Monitoring	Number participants wearing pedometers in Tasmania
Australian Diabetes, Obesity & Lifestyle Study	Omron HJ-003/HJ-102	2	1,126
Tasmanian Older Adults Cohort	Omron HJ-003/HJ-102	7	1,100