

**WA PHYSICAL ACTIVITY TASK FORCE
RESEARCH AND EVALUATION WORKING PARTY**

BACKGROUND & SUMMARY OF RESEARCH

Prepared by the Research and Evaluation Working Party

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BACKGROUND & SUMMARY OF RESEARCH

Introduction

In 2000, the then Premier of Western Australia announced the establishment of a Physical Activity Task Force (PATF) to develop a strategy to improve current physical activity (PA) levels in the Western Australian Community. In March 2001, the newly elected Premier endorsed the role of the Task Force. The overall goal of the strategy is to increase (from 58% to 63% over 10 years) the proportion of Western Australians who are sufficiently active according to national recommendations.

The Task Force is supported by six Working Parties, and each Working Party will be responsible for developing and writing the relevant sections of the strategy;

1. Schools and School/Community
2. Health and Home
3. Sport and Recreation
4. Workplace and Transport
5. Communications
6. Research and Evaluation

This background paper was prepared by the Research and Evaluation Working Party to provide summary information from the published literature on physical activity to inform the work of the other five Working Parties. In particular, this paper presents the most recent data specific and relevant to physical activity in Western Australia. It was prepared to assist the development of strategic directions for the Task Force and to identify the gaps in current knowledge and identify priority target groups and populations.

1. Physical activity levels in the population

The following section summarises available data on physical activity levels in the National and Western Australian Populations. There is enough evidence to indicate that physical activity is of clear benefit in relation to five out of the six current Australian National Health priorities.²⁵ In recent years, it has become recognised that incidental physical activity (such as gardening, housework, using stairs in place of elevators/lifts, etc.) is an important component in overall physical activity as an alternative to or in conjunction with structured/planned exercise bouts. However, standard 'self-report' methods currently used to measure physical activity at best tend to under-estimate incidental activity and at worst, may not detect it all. It should be noted therefore that the following data are crude measures of overall physical activity levels, as all activity may not be accounted for, including incidental and occupational physical activity in the population, and should therefore be interpreted with caution.

1.1 Adults (18 yrs+)^{1,2}

Recent data (1999) are available for Western Australia¹ based on a random sample of 3,178 rural and metropolitan adults of all age groups, education levels, marital status and major employment groups. The main findings for the following subgroups are reported below:

- 58% of Western Australian Adults undertake physical activity at levels likely to benefit their health. This is defined as either 150 minutes of moderate intensity physical activity over 5 or more sessions or 60 minutes of vigorous intensity physical activity.¹
- Men (63%) were more likely to be sufficiently active, compared with women (53%).¹
- 12% of Western Australian Adults reported not participating in any physical activity.¹

According to the National Physical Activity Survey conducted by the Australian Institute of Health and Welfare in 1999² the following was reported:

- Between 1997 and 1999 there was a decline in the proportion of Australians participating in physical activity at levels sufficient to benefit their health (62% to 57%).²
- The proportion of Australians who do no physical activity increased between 1997 and 1999 (13% to 15% respectively).²

1.1.1 Gender differences¹

In 1999, from the WA survey¹:

- More women (35%) than men (11%) reported insufficient levels of activity.
- More women (41%) than men (32%) were contemplating increasing their levels of activity in the next month at the time of the survey.
- 12% of women stated weight control as a motivating factor for being active as compared to 7% of men.
- Men were more likely to be involved with an exercise or sporting club (22%) than women (13%), with 43% of men compared with 28% of women being members of a club (sporting, exercise or outdoor recreation).
- Men were more likely to report provision of facilities at the worksite (17%) than women (13%).
- Men were less likely to report gaining information about physical activity from the following sources than women: community centre (16% vs. 30%); newspaper/magazines (29% vs. 35%); and the local library (12% vs. 20%).

1.1.2 Older adults (60 years+)¹

In 1999, from the WA survey¹:

- The proportion of inactive respondents in the WA physical activity survey¹ increased with age, with as many as one in six inactive adults (15%) over 60 years of age compared with 18-30 year olds (7%).
- Older Australians showed less intention to change their level of physical activity (over 50%).
- Older adults reported that the main reasons for not doing more physical activity were due to, already believing that they are active enough and poor health.

- Older adults were more likely to obtain their information on physical activity from the general practitioner (26%), followed by friends/family (23%).

1.1.3 Disadvantaged groups^{1,10,19,22}

There are limited data available for Western Australia on physical activity participation and prevalence among disadvantaged people. The following information is reported from the WA survey (1999)¹, the Australian Institute of Health and Welfare (1999)¹⁰ and (2000)¹⁹, and the Social Determinants of Health²².

- Adults in WA with an education level of less than Year 12 equivalent were less likely to reach sufficient levels of physical activity (50%).¹
- Adults in WA in management/professional positions were less likely to be inactive (7%) compared with those in white collar (13%) and blue collar (14%) positions.¹
- Socioeconomically disadvantaged groups have lower life expectancy than the national average.¹⁰ The most socioeconomically disadvantaged groups are expected to live 3 years less than those most advantaged.¹⁹
- Those who are worse off socioeconomically have worse health and a gradient of ill health and mortality exists and spans all socio-economic strata.²²

1.1.4 Rural and Metropolitan areas¹

In the 1999 WA survey¹:

- There was little difference in the proportion of the adult population reaching sufficient physical activity levels with regards to where they lived.
- WA adults living in the Kimberley/Pilbara region (45%) were most likely to have no intentions to become more active, compared with adults living in the metropolitan area (33%) and those in the Midwest/Goldfields (29%).
- Regardless of location, the top three barriers to being more physically active were lack of time, the perception that they were already active enough and lack of motivation.
- The provision of physical activity facilities and programs at work were reported more frequently by residents in the Perth metropolitan area (17%) than in the country regions (13% in the Kimberley/Pilbara region and 8% for both the South West and Midwest/Goldfields regions).

- Membership of any sport, exercise or outdoor recreation club was more likely among residents of the country regions than among Perth residents. Only 34% of Perth metropolitan adults reported membership of clubs compared to Midwest/Goldfields (43%), Kimberley/Pilbara (40%) and South West (36%).

1.2 Children (4-11yrs)^{3,4,5,17}

The most recent (1995, 1996 and 1997) data on physical activity levels and fitness of children were collected during the Western Australian Child Health Survey^{3,4,5}. A total of 2,737 children aged 4 to 16 years were surveyed. The main findings with regards to physical activity levels and participation are summarised below:

- 53% of children were involved in organised sport and 69% engaged in informal sport.⁴
- Country children were more likely to participate in organised and informal activities than Perth metropolitan children particularly in organised groups (26% compared to 17%), organised sports (60% compared to 50%) and informal sports (77% compared to 66%).⁴
- Children with two parent families were more likely to participate in organised sports (55% compared to 43%) than single parent families.⁴

An ABS survey in 2000¹⁷ reported the participation in cultural and leisure activities of 9,700 Australian children. It found that:

- Over 29% of Australian children were involved in at least one of the four selected cultural activities outside of school hours.¹⁷
- The most popular cultural activities were playing a musical instrument (18%), followed by dancing (10%), singing (5%), and drama (5%).¹⁷
- 10% of girls were involved in more than one of the selected organised cultural activities compared with 3% of boys.¹⁷
- In 2000, 59% of Australian children participated outside of school hours in sport that had been organised by a school, club or association.¹⁷
- Not only was the participation rate higher for boys (66%) than girls (52%), the percentage of boys participating in more than one sport was greater (32% compared with 20%).¹⁷

- Participation in organised sport outside of school hours ranged from a low 32% for children aged 5 years to a peak of 69% for those aged 11 years.¹⁷
- Children living in the six state capital cities had lower participation rates in organised sport outside of school hours than those living elsewhere in Australia (57% compared with 62%).¹⁷
- Children born overseas in countries other than English-speaking countries had the lowest participation rates (47% for boys and 26% for girls).¹⁷
- Children living in couple families had a higher rate of participation in organised sport (61%) than those living in one-parent families (51%).¹⁷
- Over half (51%) of children living with a single parent who was not employed did not participate in organised sport or one of the selected cultural activities compared with less than a quarter (21%) of children living in a couple family with two employed parents.¹⁷

1.3 Adolescents (12-16yrs)^{3,4,5,14,15,16}

Data on adolescents were collected during the WA Child Health Survey^{3,4,5} and results were further reported by the Ministry of Sport and Recreation.¹⁶ The main findings regarding physical activity participation from the Monitoring Standards in Education (MSE) reports in 1994 and 1998^{14,15} are summarised:

- By the age of 12 only 51% of young people engage in aerobic activity as often as four or more days per week.¹⁶
- With the onset of high school, there is a 10% decline in the rate of aerobic exercise and by the age of 16 only 26% of young people are still maintaining this level of activity.⁴
- Adolescent boys engage in regular aerobic exercise more frequently than girls (50% compared to 37%).⁵
- Adolescents living in country areas compared with Perth metropolitan adolescents were more commonly involved in coached sports (79% compared to 66%).⁴
- In government schools, 38% of adolescent students had participated in two or more coached sports in the past year compared with 51% in Catholic schools and 61% in other non-government schools.⁵

- Adolescents who were less active were found to be considerably more likely to have participated in health-risk behaviours (smoking, drinking alcohol, poor diets).¹⁶
- Adolescent students who exercised regularly reported fewer mental health problems (17% compared to 30%).⁵
- There is a declining rate of physical activity as students reach secondary school. It appears to be related to lower participation in physical activity during free time at school.¹⁵
- Students who exercise regularly are more likely to be rated by their teachers as having better academic performance.¹⁶
- Most students failed to achieve the minimum ACHPER Multi-stage fitness levels, particularly girls, with the failure to reach minimum levels increasing from 30% in Year 7 to 60% in Year 10. For boys, this rate increased from 40% in Year 7 to 50% in Year 10.^{14,15}

1.4 Special populations

1.4.1 Indigenous people^{6,10,14,15,18,19,20}

Limited data are available for Western Australia on physical activity levels in the Indigenous population. The Australian Bureau of Statistics^{6,18,20} and the Australian Institute of Health and Welfare^{10,19} provide some insight into obesity and overweight in the Indigenous population and their mortality compared with other Australians:

- Indigenous children aged 5-9 years were, on average, short for their age and heavy for their height, based on international reference values.⁶
- Among children aged 7-15 years, both overweight and underweight were more common than expected, based on Australian reference data.⁶
- Among adults, Indigenous males were on average about 3-4cm shorter and females were about 2-3cm shorter than their Australian counterparts up to age 65 years.⁶
- Based on body mass index (*see glossary of terms for definition of BMI*), about 25% of Indigenous males and 28% of females aged 18 or over could be classified as obese, compared with 19% of all-Australian males and females of that age group.⁶

- Among Torres Strait Islanders, about 43% of adult males and 50% of adult females could be classified as obese.⁶
- The life expectancy of Aboriginal and Torres Strait Islander peoples is markedly lower than the national average. Indigenous persons born in 1996-98 are expected to live about 20 years less than the rest of the Australian population.^{10, 18}
- Cardiovascular mortality is higher among Indigenous Australians and socioeconomically disadvantaged groups than other Australians.¹⁹
- Non-Insulin dependant diabetes mellitus (NIDDM) was reported as being 7-8 times higher among Indigenous people than non-Indigenous people among those aged 25-44 and 45-54 years, and almost three times higher in those aged 55 years or more.²⁰

Furthermore, the MSE reports in 1994 and 1998^{14,15} documented the following observations on health and physical education from a sample (n=125) of Indigenous children and adolescents:

- Almost one third of Indigenous students may complete their compulsory education without mastering an adequate level of understanding of health. Such a lack of knowledge and skills has the potential to result in serious repercussions for both their present and future health.¹⁴
- Indigenous students overall display a lower rate of development of cognitive understanding of physical education.¹⁴
- In relation to healthy lifestyle and self-management skills, the mean scores for Indigenous students were below those of non-Indigenous students.¹⁵
- Physical activity carries greater importance to Indigenous students. They also reported greater than average enjoyment in physical education lessons.¹⁵

1.4.2 Culturally and Linguistically Diverse people (CALD)^{14,15,19,25,26}

Limited data are available on participation in physical activity for this group. The following information is taken from the current draft document 'Getting Australia Active: Best Practice for the promotion of physical activity'²⁵ and from a 1995 ABS survey on National Health.²⁶

- Cardiovascular mortality is higher among Indigenous Australians and socioeconomically disadvantaged groups than other Australians.¹⁹
- Available data suggest that Australians from some non-English speaking backgrounds have consistently lower levels of self-reported physical activity than their Australian born counterparts.²⁵
- Among the overseas-born, 14% of females who had been in Australia for less than five years perceived their health to be fair or poor, while only 10% of males in this category reported fair or poor health.²⁶
- People who spoke English at home reported lower rates of fair or poor health than those who spoke a language other than English (16% compared to 23%).²⁶

The MSE reports in 1994 and 1998^{14,15} also documented the following in relation to health and physical education of children and adolescents with a language background other than English (LBOTE):

- LBOTE students had mean scores significantly below those of students from English speaking background with regards to Health Education performance.¹⁴
- At year 10, LBOTE students placed less importance in physical education than students with an English speaking background.¹⁴

1.4.3 Disabled people^{25,28}

Recent data on physical activity and the disabled population are limited. In 1988, the Australian Sports Commission conducted a survey on participation in sport by people with disabilities. Consequently, a national perspective paper was produced in 1993²⁸ reporting the results of the survey. It presented the following demographic data and information relevant to the health and well-being of the disabled population.

- There was an estimated 2.5 million people (16%) of the Australian population, with disabilities.²⁸
- Disability and Handicap increase with age (e.g. 3% of children aged 0-4yrs were disabled compared to 64% of adults aged 75yrs and over).²⁸
- Mobility handicaps were the most frequently reported limitation (1.6 million).²⁸
- There were one and a half times more severely handicapped females than males, and this effect is concentrated in the older age groups.²⁸

- Musculo-skeletal conditions were the most common impairments (881,600) and cause the most handicap, followed by loss of hearing (680,000) and circulatory diseases (478,200).²⁸
- People with disabilities had lower incomes than the general population.²⁸
- In general, the group most likely to participate in competitive sport were people aged 5-45 years.²⁸
- Of all the States and Territories, Western Australia appeared to be the most organised in providing programs in sport and recreation for people with disabilities.²⁸
- In addition, WADSA (Western Australian Disabled Sports Association) estimated that in 1992-3, a total of 9,117 disabled people participated in the 'Come'n try' program, taking part in 171 activities offered.²⁸
- It was reported that the main barriers to participation and full enjoyment of participation for disabled people in sport and recreation activities were:
 - Lack of transport
 - Access
 - Lack of similar competitors
 - Lack of helpers
 - Physical/health problems
 - Lack of experienced coaching
 - Lack of information/awareness about available sport/recreation.

More recent information has been reported in the current draft document 'Getting Australia Active: Best Practice for the promotion of physical activity'²⁵:

- People with disabilities have lower rates of participation than the able bodied population, and most perceive their disability to be a barrier to physical activity.²⁵
- People with disabilities who are physically active have decreased rates of hospital admission and decreased secondary health complications.²⁵

1.5 Key target groups for the physical activity strategy^{1,5}

Physical inactivity is a prudent risk factor across the population, however the research data highlight a number of groups in WA in whom levels of physical activity are lower than in the general population. The Western Australian Physical Activity Strategy will need to specifically target the following groups whilst encompassing the need to reach the wider insufficiently active population¹:

- **Adults** (42% not active at sufficient levels to benefit their health.)¹
- **Women** (47% not sufficiently active).¹
- **Middle aged and older adults:**
 - aged over 45yrs (48% not sufficiently active).¹
 - aged over 60 years (51% not sufficiently active).¹
- **Less well-educated adults** (50% not sufficiently active among people educated to less than TEE level).¹
- **Obese adults** (16% were inactive and only 45% reported undertaking sufficient physical activity, compared with 56% of those who were overweight and 62% of people whose weight was within the acceptable range).¹
- **Adolescent girls** (more boys than girls engaged in regular aerobic exercise [50% compared to 37%]).⁵
- The sample for the WA survey contained limited/no data on the following sub-populations which may indicate the need for these groups to be a priority for WA research to support the physical activity strategy:
 - **Children;**
 - **Indigenous people;**
 - **Culturally and linguistically diverse people;** and
 - **Disabled people.**

2. Individual factors

The research literature has identified a number of personal factors that influence the individual decision about participation in physical activity. These include the Stage of Change (Prochaska and others)^[as cited in 1] or readiness to be more active, in addition to factors such as knowledge about the health benefits of being active, perceived barriers to activity and individual motivations for being active.

The following section summarises data on individual factors, collected in the Western Australian Physical Activity Survey.¹

2.1 Stage of Change for physical activity¹

Readiness to be physically active as proposed in the ‘Stage of Change’ model was assessed using data from the WA Physical Activity Survey¹. This model is widely used in behavioural research to describe the distribution of ‘readiness to change’ in populations. In the most simple form, the model identifies people as belonging to one of five groups: ‘Precontemplation’, i.e. not thinking about changing their behaviour; ‘Contemplation’, i.e. thinking about changing their behaviour, but not in the near future; ‘Preparation’, i.e. thinking about changing their behaviour in the near future; ‘Action’, i.e. currently attempting to change their behaviour, and ‘Maintenance’, i.e. changed their behaviour in the past and currently maintaining the new behaviour.

[Prochaska and others as cited in 1]

The survey reported that over one quarter (29%) of all Western Australian adults were insufficiently active but intending to do more activity in the next month or next six months. Fewer men and adults over 60 years were ready to be more active and yet these adults would benefit from a reduction in the risk of cardiovascular disease and increased protection against the risk of injury from falls.

2.2 Knowledge of health benefits of physical activity¹

In general, most Western Australians knew or had correct knowledge of the current recommendations on physical activity included in the National Guidelines for Physical Activity for all Australians. The majority of adults (93%) agreed or strongly agreed

that ‘30 minutes of walking on most days of the week was of benefit to health’ and that ‘a moderate increase in heart rate was enough to improve health’. In addition, 70% of adults were aware that physical activity could be accumulated in blocks of ten minutes. However, it was still believed by almost two-thirds (63%) of the adults surveyed that ‘vigorous exercise of at least 20 minutes, three or more times per week’ was essential for health benefits. Vigorous activity is acknowledged to provide important cardio respiratory fitness, but is a secondary recommendation in the National Guidelines on Physical Activity for all Australians. Therefore, the WA strategy needs to communicate the correct message about sufficient activity to the population.

2.3 Motivators for being active¹

Western Australians who reported that they had participated in at least some physical activity in the past week were asked their main reasons for being active. The most frequently reported reasons for being active were:

1. To improve fitness (37%)
2. Enjoyment (23%)
3. Weight control (9%)

Only 2% of Western Australian adults stated ‘a reduction in the risk of heart disease’ as the major reason for their participation in regular physical activity.

2.4 Barriers to participation in physical activity¹

The main reasons that Western Australian adults identified for not being more active were:

1. Lack of time (51%)
2. Already active enough (28%)
3. Lack of motivation (14%)
4. Poor health (10%)
5. Child responsibilities (6%)
6. Being too old (3%)

The WA strategy needs to develop ways to target these perceived barriers to physical activity, and reinforce the motivations for becoming active.

2.5 Sources of information on physical activity¹

Providing information on the benefits of physical activity, and on how and where to be active, is an important element of supporting active lifestyles in a community. When asked where they obtained information on physical activity the most frequently reported sources were:

1. Friends and family (41%)
2. Magazines and newspapers (32%)
3. Gym or sports centre (31%)
4. General practitioners (19%)

The least popular sources of information were pharmacists, shopping centres and other health care professionals. The WA strategy needs to consider the most popular sources of information and specifically target some of these avenues to encourage participation.

2.6 Social support for physical activity¹

Social support from family, friends or colleagues has been shown to be a significant factor in both initiating and maintaining physical activity. The majority of Western Australians (58%) reported that they participated in physical activity with a friend, and 21% with their spouse or partner. Only 1% of people identified that they did physical activity alone.

3. How people are active – types of physical activity

3.1 Transport^{21,24,27}

In 1999, the Department of Transport conducted a survey on 1510 people (16 years of age and over), incorporating a representative sample of each local metropolitan government area, to determine the use of cars, public transport and active commuting in the Western Australian population.²⁴ The Australian Bureau of Statistics (1997²¹ and 2000²⁷) conducted national surveys on transport and the environment and reported findings on car/public transport use and active commuting. The summary results are presented below.

3.1.1 Car use

Adults

- Australia-wide in 1997:
 - One quarter of annual travel was by car.²¹
 - The average distance for car trips were less than 7km.²¹
 - 1/3 of all car trips were less than 3km.²¹
- WA was reported as having the highest percentage of car users (90%).²¹

Children

- In 1999, although 60% of primary school children in WA lived less than a 20 minute walk to school, the main travel mode to school for 60% of these students was by car.²⁴
- In contrast, 68% of secondary students lived more than a 20 minute walk to school and the main travel mode was by car (38%), followed by public transport (29%), walking (21%) or cycling (8%).²⁴

3.1.2 Public Transport use

Adults

- Nationally in 1997, 7% of adults travelled to work by bus.²¹
- In WA in 1999, 8% travelled to work and 3% travelled to local facilities using public transport.²⁴

Children

In WA in 1999:

- 14% of children travelled on public transport to school.²⁴
- 37% of high school children travelled home from school using public transport.²⁴

3.1.3 Active Transport

Adults

- In 2000, cycling and walking were the lowest in WA and the ACT, compared with other Australian states, with less than 5% commuting actively to work/study (4% walked and 1% cycled to work).²⁷
- In 1999, 21% of adults in WA walked and 2% cycled to local facilities.²⁴
- Of those who used public transport, 55% walked for 15 minutes or more as part of their trip.²⁴
- Age – 66% of 21-50 year olds did not walk for transport.²⁴
- Income – lower income people were more likely to walk for transport.²⁴
- Gender – 43% of females and 38% of males walked more than half the time to local facilities.²⁴
- 95% of respondents believed that walking (and less driving) would improve the environment and 51% of these said that this factor was an encouragement for walking.²⁴
- In addition, 59% agreed that better facilities (well-lit, safe footpaths, shady trees and interesting environments) would encourage them to walk more.²⁴

Children

In WA in 1999:

- 25% reported walking either alone or with a friend or adult, and 10% reported cycling.²⁴
- Barriers to walking²⁴ included:
 - School too far (49% primary, 71% secondary school)
 - Fear of being attacked (10% primary)
 - Too young (10% primary)
 - Traffic safety (5% primary)
 - Too lazy (8% secondary)

- Having too much to carry (4% secondary)

3.2 Participation in sport and recreation¹

The Western Australian Physical Activity Survey¹ and surveys conducted by the Health Promotion Evaluation Unit in the University of Western Australia⁷ provide data on participation in different sports and activities, including the use and accessibility of facilities in Western Australia. The survey on recreation and health⁷ interviewed representative samples of 2,629 adults aged 16-69 years in 1992, 2,031 in 1994 and 1,337 in 1998.

3.2.1 Sporting club memberships⁷

In 1998, 32% of respondents in the survey on recreation and health⁷ were members of one or more sporting (26%), outdoor recreation (8%) or racing (3%) clubs. Sporting club membership declined from 31% in 1992 and 30% in 1994 to 26% in 1998. The most common types of club memberships in 1998 were as follows:

- | | |
|-------------------------|--------------------|
| 1. Golf (3%) | 2. Football (3%) |
| 3. Health club/gym (3%) | 4. Netball (2%) |
| 5. Tennis (2%) | 6. Lawn Bowls (2%) |

In 1998, 49% of respondents with children aged 15 years or younger had family involvement in one or more junior sporting or racing clubs. This represented an increase compared with 43% in 1992, and 45% in 1994. The most common types of junior club involvement were as follows:

- | | |
|----------------------|------------------|
| 1. Football (16%) | 2. Netball (11%) |
| 3. Basketball (10%) | 4. Soccer (9%) |
| 5. Hockey (6%) | 6. Swimming (5%) |
| 7. Martial Arts (5%) | |

Club membership for sporting, racing or outdoor recreation, was more common in males (40%, 39%, 37% respectively in 1992, 1994 and 1998) than females (32%, 29%, 27%). Football and golf were the most popular clubs among men and netball and health clubs were most common for women⁷.

3.2.2 Participation in different activities among Western Australian Adults¹

The UWA survey on recreation and health³⁴ in 1998 collected data on participation in the arts although physically active forms of arts such as dance were not separately identified. Overall 35% of adults reported participation in some form of arts activity, either formal or informal but not including being an audience member or an administrative or backstage role³⁴.

In the WA Physical Activity Survey¹, walking was the most popular activity reported by men (73%) and women (80%). Vigorous-intensity activities, such as jogging, cycling or aerobics were reported by 49% of men and 39% of women. Other moderate intensity activities such as golf and lawn bowls were undertaken by about one third of adults. The types of physical activity most frequently undertaken in the previous week were walking for recreation (men 50%, women 69%), gardening (men 37%, women 38%), walking for transport (men 26%, women 25%) and swimming or surfing (men 13%, women 11%).

3.2.3 Facilities used for activity in Western Australia¹

Local streets/paths were identified as the most frequently used facility for walking for recreation (52%) and walking for transport (79%). Other frequently used facilities were local parks (12%) and the beach (10%). People who cycled or ran/jogged for recreation and for transport also nominated the street as the most frequently used facility. Swimming was undertaken at the beach (36%) and in public pools (34%) while most team games (83%) and aerobics (65%) were undertaken at health and sport clubs.

3.2.4 Access to facilities in Western Australia¹

Only 16% of Western Australians reported access to physical activity facilities or fitness classes at work. Working adults can spend half their waking hours at work and access to on-site and nearby facilities would encourage activity before or after work, or at lunchtime.

3.3 Incidental physical activity^{1,12,32}

It is clear that ‘incidental’ physical activity such as walking for errands or transport, using stairs instead of lifts, gardening and housework, all contribute to the total physical activity that an individual accumulates in a day.^{1,12,32} In light of evidence that bouts of moderate intensity activity (see Appendix for definition) of as little as 10 minutes duration are likely to confer health benefits, it follows that any incidental activity of moderate intensity lasting 10 minutes or more, may also be of benefit to health.^{1,12} However, there is a notable lack of population data on participation in incidental activity and a detailed understanding of the exact contribution of incidental activity to health has yet to emerge. There is an urgent need to develop methods that adequately measure incidental physical activity and its contribution to health.

4. The benefits of physical activity

In the last two decades, consistent epidemiological evidence has emerged that physical activity is a major factor in preventing mortality and morbidity from many chronic diseases. In 1998, the United States Surgeon General's report on Physical Activity and Health⁸ gave powerful international legitimacy to physical activity as an important component of public health and wellbeing.²

The quality of current evidence showing physical inactivity as a risk factor is similar to that for tobacco smoking in the 1970s². In Australia, physical inactivity also ranks second only to tobacco smoking in importance for the burden of disease and disability from all-causes.¹⁰

As a result, the US Surgeon General reported, "Increasing physical activity is a formidable public health challenge that we must hasten to meet. The stakes are high, and the potential rewards are momentous: preventing premature death, unnecessary illness and disability; controlling health care costs; and maintaining a high quality of life into old age."⁸

In addition to the well-documented health benefits, there is evidence that participation in physical activity also has potential social, economic and environmental benefits for the community. The following information summarises some of the evidence in relation to these benefits.

4.1 Physical health benefits⁸

Data from epidemiological and clinical studies provide evidence for a range of physical health benefits associated with achieving the recommended levels of physical activity. The U.S. Surgeon General's Report⁸ on Physical Activity and Health reported:

- Reduced risk of dying prematurely
- Reduced risk of developing and dying from heart disease and stroke
- Reduced risk of developing high blood pressure
- Reduced risk of developing non-insulin dependent diabetes mellitus (NIDDM).
- Reduced risk of developing colon cancer
- Fewer falls and less injury for older persons

- Maintenance of a healthy weight
- Building and maintaining healthy bones, muscles and joints
- The development of fundamental movement and coordination skills in children

4.1.1 Reducing the risk of all cause mortality

- The inverse relationship between physical activity and all cause mortality is present for all age groups and for diverse populations in different countries (Villeneuve 1999, Andersen 2000).^[as cited in 25]
- There is a reduced risk of all cause mortality amongst adults who adopt physical activity later in life (Kushi 1997, Manson 1999).^[as cited in 25]
- An increase in physical activity for middle-aged men and women appears to confer a health benefit in terms of subsequent risk of death (Sherman 1999, Blair 1995).^[as cited in 25]

4.1.2 Cardiovascular disease prevention

- Numerous population studies over four decades have shown that those who are sedentary have between a 1.5 and a two-fold risk of incident or fatal cardiovascular events, compared with those who are at least moderately physically active (Berlin and Colditz 1990, USSG 1996⁸).^[as cited in 25]
- Physical activity may improve blood lipid profiles in children and adolescents and may also have a favourable impact upon blood pressure.²⁵
- For older adults, physical activity reduces the risk of cerebrovascular disease, especially ischemic stroke.²⁵
- Part of this reduction may occur through the beneficial role of moderate physical activity upon systolic and diastolic blood pressure (Kelley 1998).^[as cited in 25]

4.1.3 Prevention of some cancers

- There is a clear and consistent dose response relationship between different forms of physical activity and colon cancer (Colditz 1997).^[as cited in 25]
- It is thought that physical inactivity causes around a fifth of all colon cancers in the population, indicating a strong role for primary prevention.²⁵

- Sophisticated methods for assessing attributable risk now estimate that around 12% of breast cancer may be caused by inactivity, a fraction similar to nutritional risk factors (Mezzeti 1998).^[as cited in 25]

4.1.4 Diabetes: primary prevention and control

- Physical activity has a role in the primary prevention and also the treatment of non-insulin dependent diabetes mellitus.²⁵
- Longitudinal studies show that the risks of developing diabetes in populations are lower in those who are physically active than those who are sedentary (Folsom 2000, Helmrich 1994).^[as cited in 25]
- For those with diabetes, there is evidence that physical activity may improve glucose metabolism, increase insulin sensitivity and prevent the increase in heart disease.²⁵

4.1.5 Physical activity and falls prevention

- Physical activity is a beneficial component of falls prevention, partly through effects on muscle strengthening and balance, and possibly through maintaining bone density.²⁵
- Both regular movement and strength training may assist in maintaining balance and flexibility, and thereby reduce the risk of falls in the elderly.²⁵
- Although physical activity among adults may maintain bone mineral density (prevent osteoporosis), the greatest primary prevention role for physical activity may be childhood and adolescence, during which period lifelong bone deposition takes place.²⁵

4.1.6 Other health benefits

- For people with osteoarthritis or rheumatoid arthritis, there is some evidence that moderate physical activity relieves symptoms, possibly reduces joint swelling, and is associated with improves psychosocial and functional status (Minor 1991).^[as cited in 25]
- Physical activity may positively influence the immune system and may be of assistance in a range of other chronic disease states.²⁵

- Through the ageing process, physically active individuals may suffer fewer of disability, those who are active may have up to five years more of disability free life, and hence improvements in quality of life (Vita 1998).^[as cited in 25]

4.2 Mental health and social benefits^{2,5,9,25}

The literature identifies a number of psychological and social benefits associated with being physically active:

- Builds self-esteem and a positive self-image.²
- Improves self-reported quality of life.^{2,25}
- Builds social skills amongst children.⁵
- Helps young people develop self-discipline, sports-personship and leadership.⁵
- May deter anti-social behaviour including: drug-use, violence and socialising in gangs.⁹
- Recent reviews have shown that aerobic exercise or strength training programs can reduce the symptoms of depression.^{2,25}
- Physical activity is as effective as meditation or relaxation in the treatment of anxiety.^{2,25}
- A recent controlled trial found that exercise training among older adults was as effective as antidepressant medication, although the onset of benefit was slower (Blumenthal, 1999).^[as cited in 25]
- Associations are often seen between physical activity and feelings of wellness, lowered levels of stress and anxiety and positive mental health in populations (Stephens 1998, Simonsick 1991).^[as cited in 25]
- In Australia, surveys have demonstrated a clear relationship between mental health and physical activity in large population samples of young, middle aged and older women (measured by the SF-36 scale).²⁵

4.3 Economic benefits¹²

- Economic studies have indicated that physical activity has a positive impact on a number of variables such as discounted lifetime costs, productivity due to reduced absenteeism and capacity for independent living among older people. However, there is a lack of data on the costings for these benefits, making them difficult to document and quantify.¹²

- In Australia, the output of the sports sector was \$7.9 billion in 1995-6, but it is not clear what proportion of this output is derived from individual participation in sport.¹²
- The ‘active recreation industry’ in Australia has sales of \$2.2 billion, and includes sports clothing and equipment and services such as aerobics and swimming.¹²

4.4 Environmental benefits^{11,23,31}

Worldwide motor vehicle transport accounts for 30% of global energy consumption and some 60% liquid petroleum use. In urban areas transport causes accidents and injury, noise and harmful effects on health. Furthermore, the construction of new roads to accommodate traffic is destroying irreplaceable landscapes and features of our cultural heritage³¹. In addition the British Medical Association¹¹ and the Department of Transport in Western Australia reported that:

- Reduced traffic congestion from more physically active forms of transport.¹¹
- Reduced air pollution from more physically active forms of transport.¹¹
- In 1999, 95% of adults surveyed in Perth believed that walking (and less driving) improves the environment. Of these, one-half (51%) reported that environmental concerns encouraged them to walk.²⁴
- More than one-half (59%) agreed that having better facilities in their area, such as well-lit and safe footpaths, shady trees and interesting environments, would encourage them to walk more.²⁴

5. The burden of physical inactivity

Not only is physical activity beneficial to the individual and to society, as summarised in the previous section, but physical inactivity also imposes a major burden on the community, in terms of physical and mental ill-health, and economic costs. The following section summarises some of the evidence in relation to the burden of physical inactivity on the community.

It should be noted that physical activity may itself be associated with some costs. The monetary outlays for equipment, memberships, access to facilities, etc., have been reported as costing over \$6,340 million to Australian households.²³ In addition, it is recognised that some vigorous intensity physical activities, if performed frequently, may be associated with sports injuries. However, with the exception of possible unexpected injury, few risks have been associated with the current recommended levels of activity. Hence, there is consensus in the literature that while excessive exercise may pose some risks and should not be encouraged from a health perspective, the benefits of regular, moderate activity far outweigh any risks.³³

5.1 Burden of disease and injury in Australia¹⁰

- Heart disease and stroke cause nearly 18% of the total disease burden.
- Diabetes causes 3% of the total disease burden.
- Physical inactivity is the second highest attributable risk factor (7%) and obesity accounts for 4% of the total disease burden.
- The most disadvantaged 20% of Australian's have a mortality burden that is 35% higher than that for the least disadvantaged.

5.2 Illness attributable to physical inactivity in Australia¹²

- Coronary heart disease (CHD), non-insulin dependant diabetes mellitus (NIDDM), colon cancer (CC), breast cancer (BC), stroke and depression have been identified as the six main diseases that have physical inactivity as an attributable risk factor. The evidence for the first three conditions is strongest, and is considered consistent with a causal relationship.

- Physical inactivity contributes to the risk of 6,400 deaths p.a. in Australia for CHD, NIDDM and CC and up to 2200 more due to the others.
- Of these deaths, 1531 occur in people under the age of 70 yrs and contributes to an estimated 77,603 potential years of life lost due to inactivity.
- These deaths are potentially avoidable if the sedentary and low activity population became at least moderately active.

5.3 Overweight and obesity^{13,32}

- Inactivity is a major factor in overweight and obesity, which in turn, are contributory factors in a large number of major chronic diseases.¹³
- The prevalence of overweight and obesity has steadily increased in Australia over the past few decades.¹³
- Figures on obesity in Australia show an increase of approximately 1% per year in those classified as overweight or obese.³²
- Associated changes in overweight and obesity have been suggested to reflect a decline in total energy expenditure and more specifically, physical activity over time.³²

5.3.1 Who is overweight?

In Western Australia in 1999:¹

- Forty percent of adults were overweight (29%) or obese (10%).
- More males (36%) than females (22%) were overweight.
- More adults in regional Western Australia (38%) compared with Perth (28%) were overweight.
- Older adults were 14% more likely to be obese than younger adults.
- Adults with less than TEE were more likely to be overweight (33%) and obese (14%) than those with TEE or further education.
- Adults in the Midwest/Goldfields (38%) were found to have the highest prevalence of overweight, compared to the South West (31%), Kimberley/Pilbara (30%) and Perth metropolitan area (28%).
- Obesity was most common in the South West and Kimberley/Pilbara regions (14%).

Australia-wide:¹³

- Adult men tend to gain weight between the ages of 25 and 40, while among women, weight changes occur most markedly during the menopausal years (45-55).
- Overweight and obesity affect 60% of Indigenous men and 58% of women.
- 5.3% of Australian children aged 12-15 years were overweight in 1985 and a further 10% were 'at risk of overweight'.
- Workers who are involved in sedentary occupations (office workers, drivers/heavy machinery operators) are more likely to be overweight.
- Unemployed and low-income groups also have higher rates of obesity and overweight.

5.4 Economic impact of physical inactivity^{10,24}

- Inactivity is ranked as the 2nd highest preventable contributor to ill health in Australia, with consequent high health costs.¹⁰
- The annual direct health care cost attributable to six major diseases associated with physical inactivity is around \$377 million per year in Australia. For the major diseases, costs were estimated to be \$161 million for CHD, \$28 million for NIDDM, \$16 million for colon cancer, \$101 million for stroke, \$16 million for breast cancer, and up to \$56 million for depressive disorders.¹²
- The Perth Metropolitan Transport Strategy identified that current trends in the growth in car trips in WA at the expense of walking, cycling and public transport, were economically unsustainable.²⁴
- In 2000, Main roads WA reported that traffic congestion costs \$100 million weekly in lost time/productivity and that, on average, every Australian family pays an extra \$1000 pa for goods and services.²⁴
- Road crashes cost Western Australia more than \$1 billion pa and are the major cause of deaths of Australians aged between 6 and 28 years.²⁴

6. The potential gains for the community of achieving a 5% increase in physical activity

Increasing the proportion of the population who are sufficiently active by 5% is likely to result in a number of benefits for the WA community. These benefits could include reduced health care costs, reduced spending on weight control programs, increases in employment in the sport and leisure sector, less traffic congestion and pollution and gains associated with improved quality of life.

6.1 Years of life gained¹²

- Increasing the proportion of sufficiently active people increased Australia-wide by 5% from 56% to 61%, would result in 505 fewer CHD deaths per year, 205 fewer stroke deaths, 39 fewer NIDDM deaths, 64 fewer colon cancer deaths, 22 fewer breast cancer deaths, and a total of 2,189 deaths avoided from all causes.
- Increasing the proportion of sufficiently active people increased Australia-wide by 5% from 56% to 61%, would result in 6,465 person years gained (<70 years) from reduced CHD deaths, 1,492 person years gained (<70 years) from reduced stroke deaths, 632 person years gained (<70 years) from reduced NIDDM deaths, 279 person years gained (<70 years) from reduced colon cancer deaths, 210 person years gained (<70 years) from reduced breast cancer deaths and a total of 35,937 person years gained (<70 years) from all causes of mortality.

6.2 Cost savings associated with disease prevention^{10,12,13}

- Direct health care costs due to physical inactivity associated with the six major diseases above have been reported as approximately \$377 million per year nationally.¹²
- Potential ‘all cause’ (i.e. all diseases and conditions) health care savings associated with increasing the proportion of sufficiently active people Australia-wide by 5% from 56% to 61%, have been estimated at \$439 million per year.¹²
- If the proportion of sufficiently active people increased Australia-wide by 5% from 56% to 61%, the cost savings associated just with reducing the 6 major diseases

(CHD, stroke, NIDDM, colon cancer, breast cancer and depressive disorders) have been estimated at \$36 million.¹²

- It is estimated that nationally, 122 deaths per year from CHD, NIDDM and CC could be avoided for every 1% increase in the proportion of the population who achieve sufficient and regular PA, equating to a gross saving of \$3.6m p.a. in health care costs Australia-wide.^{10,12}
- This does not take into consideration the costs associated with other health benefits including: improved quality of life and lower incidence of arthritis, high blood pressure and high cholesterol.¹²
- The costs of preventable morbidity due to hypertension, CVD and NIDDM were estimated at approximately \$840 million in 1992-93, of which 63% were direct costs within the health system.¹³

6.3 Cost savings associated with preventing overweight and obesity¹³

- It has been estimated that each year in Australia, \$500 million is spent by 300,000 consumers on weight control programs.

6.4 Other economic gains^{12,23,30}

- The sports sector employs over 95,000 people nationally. Around 40% of these positions are full-time. It ranks in the top twenty-five input-output industries in the sport-rich database. The sport sector compares favourably or marginally exceeds the employment levels of a number of major industries including the grains and the clothing industry.²³
- If the Government outlaid an additional \$14.8 million per year for ten years to encourage sport participation and achieved a doubling of the participation rate, the net benefits would be more than a hundred times higher than this additional government expenditure.²³
- There have been a number of claims for the potential cost-savings associated with physical activity programs in the workplace, however, there are few hard data available in terms of physical activity outcomes or employer cost-savings.¹²
- In 1997, the Australian Sports Commission estimated that if an extra 10% of the population became active, the potential gains would include a net annual benefit of \$590.2 million, potential cost savings associated with reducing heart disease of \$103.75 million, cost savings associated with reducing absenteeism from work

(1,5 day per worker per year) of \$84.8 million, and a 4% improvement in productivity in 50% of the workforce would produce a potential saving of \$ 414 million nationally.³⁰

6.5 Environmental benefits¹¹

- Reduced traffic congestion and air pollution from more physically active forms of transport.

7. Active Communities

Strategies to increase physical activity in the population need to include action at the community level.²⁹

“An Active Community refers to a community (town, suburb or any group defining itself as a community) which has accepted the challenge to develop and implement strategies to address the target of raising physical activity participation in their community by 5% over 10 years. An Active Community will not assume one prescribed form, but needs to reflect and be shaped by the priorities, needs and existing capacities and strengths of each local community in relation to physical activity. Nonetheless, from the literature and work of other related community initiatives, there emerge some core characteristics that any community might strive for. Some of these pertain to settings in which people live, work and play, and others, to opportunities for physical activity or partnerships that can facilitate increased participation in physical activity”.

Thirteen core characteristics of an Active Community have been identified:

1. Active schools – policies, programs and facilities that support and encourage physical activity.
2. Active workplaces – policies and programs that support and encourage physical activity
3. Active homes – promotion and encouragement of physical activity within and around home environments
4. Wide range of recreational and sporting opportunities, inclusive of all population groups.
5. Safe environments for physical activity
6. Accessible and affordable community facilities and services for physical activity
7. Clean and pleasant physical and natural environments for physical activity
8. Health professional and health sectors support and encouragement of physical activity

9. Programs and opportunities for specific population groups
10. Transport systems, policies, programs that compliment the promotion of physical activity
11. Participation in community life and organisations
12. Physical activity widely promoted, encouraged and modelled
13. Intersectoral initiatives and resource sharing conducive to physical activity

These characteristics encompass the five settings that the WA Physical Activity Taskforce working parties are considering, but also include other issues that overlap individual settings but that strongly impact on physical activity in communities (such as safety issues or access for specific population groups).²⁹

8. Gaps in Knowledge

This report has focused on summarising the available data on physical activity and participation in a range of activities. However there are a number of important areas for which reliable or comprehensive data are currently lacking. Of note is the lack of detailed data on participation among groups known to be priority groups for the work of the Task Force, such as children and special population groups. Also notable, is the lack of reliable information on ‘incidental’ activity and methods to measure this. This short section attempts to summarise some of the main areas that require further research or data collection, focusing in particular on areas of relevance to the work of Physical Activity Task Force. These areas include:

- Physical activity prevalence and participation in different activities by:
 - **children and adolescents**
 - **disadvantaged people** (single parent families, low SES etc.)
 - **Indigenous people**
 - **CALD people**
 - **Disabled people**
- Participation in ‘**incidental physical activity**’.
- The environmental and economic benefits of physical activity, in particular benefits beyond direct health care savings.
- The impact of physical activity on crime and delinquency rates.
- Participation in workplace physical activity programs.
- The impact of physical activity on productivity and absenteeism in the workplace.

Although not covered in the present paper, the research literature indicates that there is also a need for further information on:

- **Demonstrated projects** for targeted and comprehensive interventions.
- Information on **mediators** of physical activity (behaviour, environment, social etc.) and interventions designed to target these.

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APPENDIX

Glossary of Terms

Baseline Data

Initial performance data from which changes can be measured.

Best Practice

Best practices in health promotion are those sets of processes and actions that are consistent with health promotion values, theories, evidence, and understanding of the environment, and that are most likely to achieve health promotion goals in a specific setting.

Body Mass Index (BMI)

Body mass index is an estimated measure of total body fatness where age and sex are taken into account. The higher the BMI, the greater the risk of developing additional health problems. The formula for calculating BMI is: $BMI = \text{weight (kg)}/\text{height (m}^2\text{)}$

Capacity Building

An approach to the development of sustainable skills, organisational structures, resources and commitment to health improvement in health and other sectors.

Effectiveness

The extent to which the program, outputs and outcomes match the intended results (did it achieve its objectives?).

Efficiency

The extent to which the outputs and outcomes are achieved at a reasonable cost and in reasonable time (what has been achieved with the resources used?).

Exercise

Planned, structured and repetitive bodily movement, which is done to improve or maintain one or more components of physical fitness.

Inactive

No participation in any walking, moderate-intensity or vigorous-intensity physical activity in a week.

Incidental activity

Physical activity that is undertaken while performing other functions (usually a by-product of the function rather than specifically planned physical activity).

Insufficient activity

Some activity in a week but not enough to reach the levels classified at 'sufficient'.

Moderate-intensity physical activity

Activity that increases the heart rate slightly but does not make them huff and puff or get out of breath. Examples include walking, cycling, swimming, washing the car, heavy house work, or playing racket sports such as doubles tennis or badminton.

Performance indicator

Defines the measurement of a piece of important and useful information necessary to show that a planned effort has delivered a desired result. Two main types of performance indicators are widely used: 1. Results-oriented indicators, which identify measurable results (or outcomes) of a service or program; and 2. Implementation-oriented indicators, which measure fidelity of actions and compliance in the application of methods, resources and approaches of a service or program (was it delivered as intended?).

Physical activity

Any bodily movement produced by skeletal muscles that results in energy expenditure.

Physical fitness

A set of attributes that people have or achieve and which relate to the ability to perform physical activity.

Active recreation

Any purposeful, moderate-intensity physical activity taken individually or with others during leisure and recreation time, which contributes to the physical health and mental well-being of those taking part. Examples might include dancing, walking, and playing football with the family in the park.

Sport

Any purposeful activity undertaken individually or with others during leisure and recreation time, which contributes to the physical health and mental well-being of those taking part and which is usually undertaken in a club setting. It often involves additional components of training, performance and competition governed by a set of rules or regulations.

Sufficient physical activity

Either 150 minutes of moderate-intensity physical activity over 5 or more sessions or 60 minutes of vigorous intensity activity in a week. Activity may be accumulated in bouts of at least 10 minutes duration.

Vigorous physical activity

Or 'vigorous activity'. Rhythmic, repetitive physical activities that use large muscle groups at 70 percent or more of maximum heart rate for age ($220 - \text{age}$). Examples include jogging/running, lap swimming, cycling, aerobics and competitive team sports (i.e. basketball, football).