Physical Activity 2014

Preamble

The World Health Organisation defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical activity can take a number of forms. Exercise is a form of physical activity that is generally planned, structured, and repetitive which aims to improve or maintain one or more aspects of physical fitness.[1] Sport also requires physical exertion, and or physical skill, which by its nature or organisation is competitive.[2] Incidental activity is physical activity that is undertaken as part of carrying out normal daily life, such as climbing the stairs or walking the dog.[3] Physical activity can also be categorised in terms of its function and effect, including resistance, aerobic, incidental, and active transport.

While physical activity forms part of the body's energy balance equation, all too often the benefits of physical activity are only considered in relation to obesity and weight loss. The benefits of physical activity extend much further. Regular participation in physical activity is known to reduce the risk of physical health problems such as cardiovascular disease and stroke, type 2 diabetes, hypertension, some cancers and osteoporosis.[4,5]

Due to the release of endorphins, physical activity can also improve mood.[6] Regular participation in physical activity improves both short- and long- term psychosocial wellbeing by reducing feelings of stress, anxiety and depression.[7] There is scientific evidence to suggest physical activity can alleviate the symptoms of depression and it may also be useful in the treatment of mild to moderate depressive disorder.[8] A recent review confirmed the role of physical activity in reducing the symptoms of depression, but noted some methodological concerns and called for future research to consider the types and duration of physical activity that would provide the most benefit for those people with depression.[9]

Physical activity may also provide additional benefits for those who are already suffering from chronic health conditions. Based on estimates that between 60 and 70 per cent of the Australian population is sedentary, or has low levels of physical activity, it has been suggested that increasing participation in physical activity by 10 per cent would lead to opportunity cost savings of $258 million, with 37 per cent of savings arising in the health sector.[10]

A lack of physical activity, or physical inactivity, has been identified as the fourth leading risk factor for global mortality. Estimates suggest that physical inactivity is the principal cause for approximately 21-25 per cent of breast and colon cancer disease burden, 27 per cent of diabetes, and 30 per cent of ischemic heart disease burden worldwide.

Vigorous intensity physical activity (eg jogging or other aerobic exercise) generally provides increased health benefits. [11] However, it is important to recognise that some of the biggest health gains are made by those individuals who transition from being physical inactive (sedentary) to moderate amounts of physical activity. Evidence suggests that

activities such as walking for half an hour a day on five days a week may increase life expectancy by 1.5 to 3 years.[12]

Current trends

While it is recognised that the modern environment promotes sedentary behaviour, levels of physical activity in Australia appear to be growing (following a period of decline). [13],[14] Sixty five per cent of Australians aged 15 years and over reported participating in physical activity at least once during the past 12 months (with more than half reporting that they participate, on average, at least twice per week). Young people aged 15-17 years have the highest participation rate, with rates generally decreasing with age. In general, males have slightly higher participation rates, this difference is more significant in the younger age groups (15-17 years males 85 per cent, females 70per cent; 18-24 year olds, males 76 per cent compared with females 67per cent). Other significant factors found to impact on participation in physical activity include country of birth, employment status and level of education.

In relation to children, the 2007 Australian National Children's Nutrition and Physical Activity Survey found that, on any given day, there was a 69 per cent chance that any given child would get at least 60 minutes of moderate to vigorous physical activity. Underweight and obese children were found to have lower levels of physical activity than children of a healthy weight.[15] Along with school-based physical activity, 60 per cent of children participate in at least one organised sport, with the most popular options including soccer, swimming and netball. [16]

Guidelines

Adults

The current Australian Physical Activity Guidelines recommend at least 30 minutes of moderate physical activity on most days for adults. [17] Similarly, the World Health Organisation recommends that adults undertake at least 150 minutes of moderate physical activity per week (equivalent to 30 mins each day for 5 days). Additional health benefits are available when this amount is increased to 300 minutes (60 minutes each day for 5 days). [18]

In a move that recognises current rates of overweight and obesity, the recently revised Australian Dietary Guidelines recommend 45–60 minutes of moderate physical activity (on most days) for those individuals wishing to maintain a healthy weight. An increase of 60-90 minutes of moderate activity, or smaller amounts of vigorous activity, is recommended for those wishing to lose weight or to prevent weight gain in people who were formerly obese. [19] Initially participation in physical activity can be built up in increments of 10–15 minute sessions.

Older Adults

Participation in physical activity by older people can improve bone health, reduce falls, and improve psychosocial wellbeing. This is important given Australia's ageing population. Guidelines (recommendations) are consistent with those for other adults (at least 30 minutes on most days) but recognise that participation will depend on a range of

factors, including health status. There is also a specific focus on participation in activities that enhance mobility and balance.

Infants and children

From a young age, children can benefit from physical activity that can positively affect cognitive, developmental, coordination, confidence and self esteem. Specific activities may provide additional benefits (swimming can increase water safety awareness, cycling can increase road safety awareness). Australian physical activity guidelines for infants and children suggest:

- Infants should be engaged in supervised, floor based play from birth (0-1 year);
- Toddlers and preschool aged children (1-3, 3-5) should be physically active for at least three hours per day spread throughout the day;
- Children aged two years and under should not spend time watching TV or using other electronic media. For children aged 2-5 years, these activities should be limited to less than one hour per day; and
- For children aged 5-12 years, at least 60 minutes (and up to several hours) of moderate to vigorous physical activity every day.

The documented health benefits of exercise among children and youth include increased physical fitness (cardio and muscular strength), reduced body fat, favourable cardiovascular and metabolic disease risk profiles, enhanced bone health, and reduced symptoms of depression.[20]

Physical activity over the life span

The role of physical activity in brain development

Providing infants with opportunities for physical activity and the development of motor skills is a critical aspect of the first years of life. At birth, muscles are not well developed but, within a short timeframe, infants build muscle mass that allows them to roll over, sit up, crawl, stand, and eventually walk.[21] In addition to building muscle mass, appropriate physical activity in infants stimulates important neural development. Providing infants with a stimulating environment, which includes opportunities for daily physical activity such as floor based play, is critical to healthy growth and development.

Research suggests that, along with benefits relating to early brain development among school age children, participation in sport and other forms of physical activity can enhance academic achievement in children via improved cognitive functioning, memory, concentration and behaviour.[22]

The role of physical activity in prevention and management of chronic disease

The incidence of chronic disease increases with age. In Australia, chronic illnesses are responsible for 80 per cent of the total burden of disease.[23] Over 70 per cent of the Australian adult population suffers from at least one chronic disease, with one quarter suffering from two or more chronic health conditions. The rising burden of chronic illness is already impacting on the Australian health system and is likely to increase in the future. [24] While some of the risk factors for chronic disease are non modifiable (such as

family history, age, gender), physical inactivity is an easily modifiable risk factor for a number of chronic and debilitating health conditions. The time lag between engaging or increasing physical activity and observing health benefit is relatively short.[25]

Recent evidence confirms that engaging in moderate physical activity is very important for the primary prevention of chronic diseases. This includes:

- Consistent findings around an inverse association between physical activity and cancer risk (with evidence around breast and colon cancer showing the biggest risk reductions);
- Physical activity has been linked to improved outcomes for those undergoing organ transplantation;[26]
- Physical activity has also been linked with reduced morbidity and mortality from cardiovascular disease;
- Physical activity is associated with improved quality of life among those patients who have had a cardiac event;
- Physical activity also has a significant role in the prevention (and management of) type 2 diabetes, which is a growing health problem worldwide;
- Physical activity is also associated with lower levels of psychological distress, including depression.[27]

In addition, certain types of physical activity during childhood and adolescence convey a reduced susceptibility to fractures related to reduced bone density. Similarly, physical activity that focuses on improving balance in the elderly helps to reduce the chance of a fall.

Physical activity can also play an important role in the management of many chronic diseases, by reducing some aspects of disease progression and improving quality of life. Medical practitioners should be consulted during the development of physical activity plans for individuals with single or multiple chronic diseases.

Health risks of physical activity

Concerns about safety may be a barrier to participation in some sports, particularly among children. A survey of parents in NSW identified that more than one quarter of parents of active children aged 5-12 years reported discouraging or preventing children from playing a particular sport because of injury and safety concerns.[28] While some sports are offered to children in a modified format, which increases safety, other sport and leisure time activities could also be modified to increase participant safety.

For adults, there are some forms of physical activity that have increased rates of injury. In some instances, safety equipment may be used to reduce risk of injury. There are also risks associated with participation in too much exercise, particularly among those who have previously been sedentary. There is some risk inherent in the participation in almost all forms of exercise and sport. However, the benefits largely outweigh the risks, and efforts should be made to encourage participation.

Trained first responders who have completed specific training in advanced first aid should be in attendance at sporting events with large numbers of participants because they can provide initial clinical management, prior to the arrival of paramedics or other medical professionals. Automated external defibrillators (AEDs) should be accessible in all places where people participate in physical activity. Timely use of AEDs can improve chances of survival for those individuals who suffer from a sudden cardiac event.

Elite athletes may suffer from injury due to large amounts of physical activity. Injuries are usually specific to the sport, and are often managed by medical professionals who specialise in treating athletes.

Access

Participation in physical activity tends to be influenced by certain socio-demographic factors including occupation, marital status, gender, cultural background, geographic location, and education. Those less likely to be active include older people, people with disabilities, and poorer people because of concerns about affordability, and the lack of opportunity to access (or the existence of) the necessary infrastructure to support participation.

Culturally and Linguistically Diverse (CALD)

Many culturally specific activities contribute towards physical activity levels. Providing culturally specific physical activity advice to people from CALD backgrounds may enhance participation rates, which can be of particular benefit in this higher risk population group. [29]

Aboriginal Peoples and Torres Strait Islanders

In 2001, it was estimated that 70 per cent of Indigenous Australian adults living in non-remote areas reported their physical activity levels as low or sedentary. [30] While the lack of academic literature in this area is concerning, this should not prevent efforts to improve access and participation in physical activity. Supportive environments encouraging physical activity, such as swimming pools in remote communities, may have broad ranging positive impacts.[31]

People with a disability

Where possible all people with a disability should be encouraged and supported to participate in physical activities. This may require modified or specialised equipment. The cost of this equipment should not prevent participation.

The built environment

There is also evidence that particular urban engineering measures can promote increased activity. Measures recommended for this purpose include development of neighbourhoods with accessible walking paths, cycle paths, parks and recreational facilities, local and accessible shops, facilities and services, and greater street

connectivity.[32] Provision of active transport networks for walking and cycling may also be very cost effective in terms of reducing future costs of cardiovascular disease. [33] State Governments and Local Councils should consider how physical activity can be encouraged in all design and development applications.

Schools and Workplaces

There is a range of settings where physical activity can be promoted. Two notable examples are school and workplaces. School based interventions to increase physical activity show improvements in student awareness and behaviour and when tested, physical and clinical outcomes. [34]

There is some evidence that interventions promoting physical activity in the workplace can provide benefits for employees as well as the organisation more broadly. This is particularly important in the context of increased concerns about the health implications of sitting for extended periods.

The role of doctors

There are a number of groups within the population, including those who do not participate in regular physical activity, that may benefit significantly from brief lifestyle interventions within the primary care setting.[35] [36] [37] [38] These interventions have been noted to increase physical activity levels in patients for up to six months.[39] Research is needed to identify how these initial increases in physical activity can be maintained in the longer term. Interventions within the primary care setting must be supported by multi-faceted population wide efforts that encourage physical activity. Medical practitioners must be supported in their efforts to encourage physical activity among their patients, including easy access to the latest evidence around physical activity and its role in the prevention and management on chronic disease. Prescribing or recommending physical activity to patients should be an integral part of medical curricula and vocational training.

In many instances, doctors may refer patients on to allied health professionals, such as physiotherapists, exercise physiologists and personal and group fitness trainers, for more specific support and monitoring of patients who are engaging in physical activity. Communication with the treating general practitioner is an integral part of these arrangements.

The role of Government

As stated above, interventions within the primary care setting need to be supported by multi-faceted population-wide interventions and public education campaigns that aim to increase population levels of physical activity. Governments should aim for a coordinated approach so that simple, clear, and consistent messages are delivered to the Australian public around physical activity. Given the costs associated with physical inactivity, its likely that these efforts will be cost effective.

Governments also have a responsibility to ensure that all sections of the Australian community have good access to safe physical activity opportunities. It is important to make physical activity choices easy, safe, convenient and enjoyable so that people seek out opportunities to engage in physical activity. Governments have a responsibility to ensure that in planning and building communities attention is paid to the provision of both incidental and planned physical activity. The recent Ministerial Statement *Walking, Riding and Access to Public Transport – Supporting active travel in Australian communities* confirms the Government's role in encouraging active transport through appropriate urban design.

The Australian Medical Association Position

The AMA acknowledges that physical activity plays an important role in the prevention and management of many health conditions. It is critical that everyone has the opportunity to engage in appropriate amounts of physical activity on a regular basis. All doctors should be alert to the opportunities to undertake lifestyle interventions with their patients including recommendations to participate in physical activity.

National physical activity guidelines play an important role in educating the public about how often they should be engaged in physical activity. These guidelines must be based on the latest evidence, factor in the current rates of overweight and obesity, and highlight the role of physical activity in the prevention and management of chronic disease.

Recommendations must be communicated in a way that makes recommendations easy to understand and achievable (guidelines that are seen as unrealistic may easily be dismissed).

The AMA believes the following are important considerations and central elements of efforts to increase participation in physical activity:

- There must be appropriate opportunities for all people to engage in physical activity;
- All doctors should opportunistically advise patients and parents of the potential health benefits of increased physical activity, especially for sedentary children and adults;
- There must be increased investment in research examining the risks and benefits (to both the individual and the community) of participating in various forms of physical activity, as well as evaluations of interventions that aim to increase participation in physical activity;
- There must be improved data collection on physical activity levels within the population, including collection of information on formal and incidental physical activity. This data collection should also include appropriate representation from specific population groups, including children and adolescents, the elderly, Aboriginal and Torres Strait Islanders, and those from culturally and linguistically diverse backgrounds.
- Physical education and physical activity must be universally incorporated into school curricula. Schools must be universally funded to support such activity;

- Opportunities to engage in physical activity should also be supported by institutions, including (but not limited to) those providing post-secondary education, aged care facilities, hospitals and prisons;
- Opportunities to engage in physical activity should also be promoted within the workplace;
- Governments must extend their focus on support for elite athletes to support of more physical activity opportunities for all Australians.
- All possible steps be taken to maximise the safety of the environments in which exercise is performed. This includes appropriate first aid facilities and equipment, including AEDS. For larger events first responders should be in attendance.
- A health assessment by a medical practitioner should be performed before someone is encouraged to undertake vigorous physical activity.

[1] WHO http://www.who.int/dietphysicalactivity/pa/en/index.html#
[2] http://asf.org.au/who/definition_of_sport
[3] WA Department of Sport and Recreation. Incidental physical activity. Available from: http://www.dsr.wa.gov.au/incidental-physical-activity
[4] World Health Organisation (2010) Global recommendations on physical activity for health.
[5] Warburton D, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. CMAJ 2006; 174: 801-809
[6] Mental Illness Fellowship of Australia Inc. (2011). The Physical Health of People Living with a Mental Illness – Literature review, programs overview and recommendations. Available from: http://www.mifa.org.au/sites/www.mifa.org.au/files/Physical%20health%20Lit%20review%20July%202011.pdf
[7] Warburton DE, Nicol CW, Bedin SS. (2006). Health benefits of physical activity: the evidence. CMAJ, 174: 801-809/
[8] Dunn, AL, Trivedi, MH, Kampert JB, Clark CG & Cambliss HO. (2005). Exercise treatment for depression: Efficacy and dose response. Am J Prev Med, 28(1). doi:10.1016/j.amepre.2004.09.003
[9] Cooney GM, Greig CA, Lawlor DA, Rimer J, Waugh FR, McMurdo M, & Mead GE. (2013). Exercise for depression – Review. The Cochrane Collaboration.
[10] Cadilhac DA, Cumming TB, Sheppard L, Pearce DC, Carter R & Magnus A. (2011). The economic benefits of reducing physical inactivity: An Australian example. International Journal of Behavioural Nutrition and Physical Activity 2011 (8): 99
[11] Bright Futures Guidelines for Health Supervision of Infants, Children and Adolescents
[12] Franco OH, de Laet C, Peeters A, Jonker J, Mackenbach J, Nusselder W. (2005). Effects of physical activity in life expectancy with cardiovascular disease. Arch Intern Med. 165(20): 2355-2360.
[13] Australian Bureau of Statistics 2006 41560 – Sport and recreation: A statistical overview, Australia 2006 Edition. ABS Canberra
[14] National Health and Medical Research Council (2013). Eat for Health. Australian Dietary Guidelines : Providing the scientific evidence for healthier Australian diets. Commonwealth of Australia. [Accessed from: http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n55_australian_dietary_guidelines_130530.pdf]
[15] Department of Health and Ageing, Australian Food and Grocery Council Department of Agriculture, Fisheries and Forestry. 2007. Australian National Children's Nutrition and Physical Activity Survey: Main Findings.
[16] ABS. 2012. 4901-1 – Children's Participation in Cultural and Leisure Activities, Australia, April 2012.
[17] Department of Health and Aged Care (1999). National Physical Activity Guidelines for Adults. Australian Government, May 1999 [Reprinted 2005]. Accessed from: http://www.health.gov.au/internet/wcms/publishing.nsf/content/BC3101B1FF200CA4CA256F9700154958/$File/adults_phys.pdf on1 June 2006.
[18] World Health Organisation (2010) Global recommendations on physical activity for health.
[19] NHMRC 2013 Australian Dietary Guidelines
[20] World Health Organisation (2010) Global recommendations on physical activity for health.
[21] Physical activity developmental chapters – bright futures http://www.brightfutures.org/physicalactivity/pdf/Infancy.pdf
[22] Martin K. (2010). Brain boost: Sport and physical activity enhance children's learning. Government of Western Australia, Physical Activity Taskforce and The University of Western Australia. Accessed from: http://www.dsr.wa.gov.au//assets/files/Research/Brain%20boost_emailer.pdf
[23] Australian Institute of Health and Welfare. Australia's Health 2008. Canberra…
[24] Aspin, C., Jowsey T, Glasgow N, Nolte E, O'Hallahan J & Leeder S. (2010). Health policy responses to rising rates of multi-morbid chronic illness in Australia and New Zealand. Australia and New Zealand Journal of Public Health.
[25] Cadilhac DA, Cumming TB, Sheppard L, Pearce DC, Carter R & Magnus A. (2011). The economic benefits of reducing physical inactivity: An Australian example. International Journal of Behavioural Nutrition and Physical Activity 2011 (8): 99
[26] Get ref.
[27] Kruk J. (2007). Physical activity in the prevention of the most frequent chronic disease: An analysis of the recent evidence. Review. Asia Pacific Journal of Cancer Prevention, (8): 325-338

[28] Boufous S, Finch C & Bauman A. (2004). Parent safety concerns – a barrier to sport and physical activity in children? Australian and New Zealand Journal of Public Health, 28(5) 482-486
[29] Moy K, Scragg R, McLean G & Carr H. Metabolic equivalent (MET) intensities of culturally-specific physical activities performed by New Zealanders. NZJM 2006: 119 (1235) URL: http www.nzma.org.nz/journal/119-1235/2000/
[30] Australian Bureau of Statistics. The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2003. ABS Canberra.
[31] Lehmann D, Tennant M, Silvia D et al. Benefits of swimming pools in two remote Aboriginal communities in Western Australia: intervention study. *BMJ* 2003. pp415-9
[32] National Institute for Health and Clinical Excellence. 2008. *Promoting and creating built or natural environments that encourage and support physical activity.* NICE Public Health Guidance.
[33] National Institute for Health and Clinical Excellence. 2007. *A rapid review of economic literature related to environmental interventions that increase physical activity levels.* NICE.
[34] World Health Organisation. (2009). Interventions on diet and physical activity: What works. Summary Report.
[35] Briffa T, Maiorana A, Sheerin N, et al. Physical activity for people with cardiovascular disease: recommendations for the National Heart Foundation of Australia. *Med J Aust.* 2006: 184: 71-75 (pp71)
[36] Bauman, A. Reviewing evidence on the effectiveness of approaches used by health professionals to increase uptake of exercises by their patients. 2003 National Institute of Clinical Studies [Accessed from http://www.nicsl.com.au/ on16 April 2006]
[37] Brown WJ. Physical activity and health: updating the evidence 2000-2003. Journal of Science and Medicine in Sport 2004; v (1) pp1-5
[38] World Health Organisation. (2009). Interventions on diet and physical activity: What works. Summary Report.
[39] Petrella RJ, Lattenzio CN. Does counselling help patients get active? Systematic review of the literature. *Can Fam Physician* 2002: 48:72-80