Stand Up WA, Reduce Sitting in the Workplace

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Chronic Diseases

> 15 million (77%) Australians are directly affected by at least one chronic disease

Source: ABS National Health Survey 2004–05.
Chronic Disease & Economic Prosperity

People with Chronic Disease
  • ↓ Workforce participation, ↑ Absenteeism and ↓ presenteeism

People with > 1 risk factor and > 1 chronic disease
  • ↑ Absenteeism (↑ 4x in males, ↑ 2.5x in females)
  • *Net annual loss* due to absenteeism with risk factors is more than that for chronic disease (112,000 vs 57,000 full-time person-years)

Source: Australian Institute of Health and Welfare, Risk Factors and Participation in Work, March 2010
Physical Inactivity – 4th leading cause of death

Figure 6: Deaths attributed to 19 leading risk factors, by country income level, 2004.

- High blood pressure
- Tobacco use
- High blood glucose
- Physical inactivity
- Overweight and obesity
- High cholesterol
- Unsafe sex
- Alcohol use
- Childhood underweight
- Indoor smoke from solid fuels
- Unsafe water, sanitation, hygiene
- Low fruit and vegetable intake
- Suboptimal breastfeeding
- Urban outdoor air pollution
- Occupational risks
- Vitamin A deficiency
- Zinc deficiency
- Unsafe health-care injections
- Iron deficiency

Mortality in thousands (total: 58.8 million)

Modern Society: Minimising Daily Muscular Activity!

Then

Transport

Domestic

Work

Now
How Australian Adults’ Overall Daily Behaviour Patterns Are Distributed Between Physically-Active and Sedentary Time

- Sedentary time: 9.3 hrs/day (60%)
- Light-intensity activities: 6.5 hrs/day (35%)
- Moderate-vigorous activities: 0.7 hrs/day (5%)

Healy et al., 2008

Mix of working & non-working adults aged 30-87 years
Standing Desks are on the rise. Sitting Too Much is Hurting our Health.

This increase in sedentary time and decrease in physical activity has profoundly impacted our health. Too much sitting is associated with numerous problems, ranging from weight gain, to osteoporosis, to cardiovascular disease. [...] 

Why sitting all day is killing you

People who sit more than six hours per day have significantly shorter lives than those who sit less. [...] 

Is your office chair killing you?

The past year has seen a surge of medical research and interest into an overlooked aspect of modern life, sitting… This article highlights some of the key reasons to get out of your chair alive. [...] 

Warning: Stand at your desk & increase your bone strength, muscle function & reduce back pain & repetitive injuries.

Sit Less Move More – Wake up to the hazards of sitting

The negative effects of sitting are a global crisis. To reduce our risk of chronic disease and premature death we need to find ways to get up and out of our office chairs. Here’s a good story from the Newzeland Herald. [...] 

Sitting for Protracted Periods Increases Risk of Diabetes, Heart Disease and Death

“Research showed that those who sat for long periods of time have a higher chance in their risk of diabetes, heart-disease and death. Interestingly, the results were independent of any individual physical exercise undertaken, suggesting that even if an individual meets the physical activity guidelines [...] 

Sit Less Move More: Sitting Is the Smoking of Our Generation

Check out this latest post from the Harvard Business Review highlighting the sitting epidemic and some neat ideas on how to improve your activity! [...] 

http://sitlessmovemore.ca
“...those who sit at their work and are therefore called 'chair workers,' such as cobblers and tailors, suffer from their own particular diseases ... [T]hese workers ... suffer from general ill-health and an excessive accumulation of unwholesome humors caused by their sedentary life”

“All sedentary workers ... suffer from the itch, are a bad colour, and in poor condition ... for when the body is not kept moving the blood becomes tainted, its waste matter lodges in the skin, and the condition of the whole body deteriorates”. (1700)
A Question To You All

For a typical weekday and a typical weekend day, what do you estimate was the total time that you spend sitting down while doing things like visiting friends, driving, reading, or working at a desk or a computer?
Device-Based Measurement of Movement and Posture

Accelerometer

Inclinometer

The ‘market dominator’ from whose output (counts of less than 100 pm) we infer ‘sedentary’ time

From whose output we can derive posture-based indices of ‘sitting’ time
Device-measured sitting time

Figure 7.17: Inclinometer-assessed sitting time according to age in 2011-12: the AusDiab study
Health Risks of Too Much Sitting

High sitting time associated with:

- Diabetes
- Cardiovascular diseases
- Cardiovascular and all-cause mortality
- Musculoskeletal symptoms
- Chronic kidney disease
- Breast & Colon cancer
- Weight gain & development of obesity
- Metabolic syndrome

Wilmot et al., 2012 & 2013 Diabetologia; Thorp et al., AJPM 2011; 1
Sitting Induces Muscular Inactivity

Figure 3. Average muscle activity in daily tasks.

http://www.plosone.org/article/info doi/10.1371/journal.pone.0052228
The ‘Circulatory’ Perils of Too Much Sitting

• Limited mobility = Less demand on circulatory system → reduced blood flow

• Insufficient blood flow
  » Pooling of blood in the lower limbs
  » Swollen or numb legs and eventually varicose veins
  » Accelerates muscle fatigue
  » Reduces the efficiency of the body’s regulatory processes
Not Just About Total Sitting Time

Sitting accumulation & health

- Prolonged sitting and musculoskeletal outcomes\(^1\)
- More breaks associated with lower waist circumference\(^2\)
- Experimental evidence
  - Interrupting prolonged sitting associated with better postprandial glucose & insulin response\(^3\)
  - One hour of exercise does not offset the negative effects on inactivity on insulin & lipids if the rest of the day is spent sitting\(^4\)

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2. Healy et al., EHJ, 2011;
3. Dunstan et al., Diab Care, 2012;
But of course some sitting is needed

“Man is designed for movement, in other words to switch between sitting, standing, walking and all postures in between”

Prolonged Sitting

Sun Exposure

Then

Now

We are SunSmart®

Baker IDI
HEART & DIABETES INSTITUTE
The Stand Up Australia program of research

Program of research investigating benefits from reducing sitting time in the workplace

A National collaboration between the Baker IDI Heart & Diabetes Institute, University of Queensland, University of Melbourne, Deakin University, Government & Non-Government Partner Organizations
What is the Extent of the Problem?

- Office workers spend a lot of time sitting
- A lot of this sitting time is unbroken (30mins+)

![Activity distribution chart]

**WORKPLACE SITTING**

- 33.5 hrs/week
- 1,608 hrs/year (67 full days)
- 75,576 hrs/working life

8.6 YEARS

Prop of prolonged (≥30 mins) sedentary time (%)
Occupational Sitting & Health Risks

Detrimental associations with:

- overweight and obesity
- risk of obesity and type 2 diabetes

Workplace settings with high sedentary behaviour (ie. call centres) report:

- weight gain
- high prevalence of musculoskeletal symptoms

Systematic review concluded:

- Not enough evidence / heterogenity
- Need more studies with better measures

1Mummery et al. 2005; 2Hu et al. 2003; 3Boyce et al. 2008; 4Karlqvist et al.; 5Toomingas et al. 2003; 6van Uffelen et al., 2010
Who is at high-risk?

Population groups that are most at risk of prolonged sitting include those working in **offices**, transportation, and highly mechanised trades.

Healy et al., 2012
Why sitting is a dangerous health threat
It’s tied to obesity, diabetes and cancer—and exercise won’t make up for it

by Kata Lunau on Tuesday, January 8, 2013 1:36pm - 12 Comments

On Sept. 24, 2007, a Monday evening, Cathleen Renner sat down in her home office to tackle a project. Renner, 47, was a manager at AT&T, where she’d been for 25 years. It isn’t clear how many hours she spent at the computer that night, making a plan for a possible employee strike, but she did send an email to a colleague at 12:26 a.m. When her son got up at 7 a.m., she was at her desk. Renner took him to the bus a little later, and as she walked out the door, she clutched her leg and let out a cry of pain. Still, she returned to work. At 11:34, she called an ambulance. Renner was dead by the time she reached the hospital.
Medical Condition 1: Low Back Pain

Prolonged Sitting = Exacerbation = Modification
Medical Condition 2: Type 2 Diabetes

FIGURE 2.11: Trends in the percentage of the population with diabetes in 1999-2000, 2004-05 and 2011-12 according to sex: the AusDiab study

Overweight/Obese
Medical Condition 2: Type 2 Diabetes

Prolonged Sitting = Exacerbation = Modification
Can Workplace Sitting Be Reduced?
Workplace Health Promotion & Chronic Disease: Looking Through a Workplace Sitting Lens

Organisational Policy & Culture

Physical Environment

Individuals

DUTY OF CARE

“A person conducting a business or undertaking must ensure so far as is reasonably practicable the provision and maintenance of a work environment without risks to health and safety”

Model Work Health and Safety Bill 23/06/2011
WHO Workplace Health Promotion Framework

WHO Healthy Workplace Model

Multiple influences
Participatory approach
Strong evaluation framework
Best practice approach to workplace health promotion – Workplace sitting

- Workplace Arrangements/Conditions
- Workplace Design
- Social / Cultural
- Individuals
- Organisational & Policy

Reducing prolonged sitting in the workplace
Multi-component intervention

- Organisational (workshops, manager emails)
- Environmental (height-adjustable workstation)
- Individual (individual consultation, telephone support)

Stand Up Comcare

Feasibility study

Stand Up Victoria

Cluster-RCT
Key Intervention Message

Stand Up, Sit Less, Move More

Aiming to:

• Reduce total workplace sitting time (*Sit Less*)
• Reduce the number of sitting bouts (*Sit Less*)
• Reduce the length of the sitting bouts (*Stand Up*)
  – particularly those 30mins+
• Increase standing and moving time (*Move More*)
• Make changes throughout the day
  • both in and out of the workplace

Achieve this via organisational, environmental & individual strategies
Environmental Change

Height adjustable workstation: WorkFit S: Ergotron
Results: Sitting, Standing, Stepping at the Workplace (%)

*Based on 8h workday

Comparison (n=18)

Baseline

Sitting: 65.1%
Standing: 24.4%
Stepping: 10.5%

≥30m: 21.7%

Follow-up

Sitting: 67.1%
Standing: 21.9%
Stepping: 11.0%

≥30m: 26.3%

Intervention (n=18)

Baseline

Sitting: 67.4%
Standing: 22.6%
Stepping: 10.0%

≥30m: 24.3%

Follow-up

Sitting: 42.0%
Standing: 47.5%
Stepping: 10.5%

≥30m: 12.7%

*Based on 8h workday
Stand Up Victoria

CIs: David Dunstan, Genevieve Healy, Neville Owen, Elizabeth Eakin, Anthony LaMontagne, Marj Moodie

- 3-year cluster-randomised controlled trial
  - 320 participants (160 per group)
  - 14 worksites from one organisation
- 3 months of intervention, 9 months of follow-up
- Organisational, individual, environmental elements
- Cost-effectiveness analysis
Scheduled Completion: Mid-Late 2014
Sitting less for adults

The arrival of the “electronic age” has fundamentally changed how much time we spend sitting (also called being “sedentary”) at home, during travel and at work. This change has been directly linked to an increase in health problems, such as poor nutrition, obesity and insulin resistance, which can lead to diabetes. These health problems also increase your risk of developing coronary heart disease.

There are many ways in which adults can sit for long periods throughout the day. A typical day might include sitting:

- to eat breakfast
- to drive to work
- at your desk at work
- to drive home
- to eat dinner
- during the evening to do things such as watch television, use a computer and socialise.

It’s easy to sit too much — adults spend more than half of their waking hours sitting.3,4 Therefore, to reduce your risk of health problems, it’s important to be aware of how much you sit and try to move more throughout the day.

Why is sitting less better for your health?

Adults who sit less throughout the day have a lower risk of early death — particularly from cardiovascular disease (CVD).5

Most research so far has been on how watching television affects health, because watching television is the most common leisure activity among adults. Adults who watch less than two hours of television a day are less likely to have type 2 diabetes or be obese, and have a lower risk of developing CVD. The reverse is also true — the more time an adult spends watching television, the higher their risk of health problems.

Adults who do regular planned exercise, such as going to the gym or running, can sit for long periods of time every day. Figure 1 (see page 2) shows how easy it is for an adult to spend a large amount of time sitting during a typical working day. In this example, the adult gets 60 minutes of physical activity that day through a brisk walk in the morning and strength training in the evening. However, they also spend 15 hours (over 60% of total waking hours) sitting.

If an adult meets the Australian Government’s physical activity recommendations of 30 minutes or more of moderate-intensity physical activity on most, if not all, days of the week, they are classified as “physically active.” However, adults may increase their health benefits if they also sit less during the day. In fact, new evidence suggests that, no matter what your total sitting time is, regular interruptions from sitting (even as little as standing up) may help to reduce your risk factors for developing coronary heart disease and diabetes.6,7

Sitting less, move more

Sitting less for children

The arrival of the “electronic age” has fundamentally changed how much time we spend sitting (also called being “sedentary”) at home, during travel and at work. This change has been directly linked to an increase in health problems, such as poor nutrition, obesity and insulin resistance, which can lead to diabetes. These health problems increase your risk of developing coronary heart disease.

There are many opportunities for children and young people to sit for long periods of time. Even children and young people who play sport after school and meet the Physical Activity Recommendations for Children and Adolescents can still spend large amounts of the day sitting. See Figure 1 below for an example of what may be a typical child’s day.

Figure 1. Example of a child’s sitting time during one day (total sitting time 7.5 hours)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 am</td>
<td>Watch TV (1 hour)</td>
<td></td>
</tr>
<tr>
<td>8:30 am</td>
<td>Travel by car to school (10 minutes)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Morning spent in classroom (2.5 hours)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical activity during recess and lunch (40 minutes)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Afternoon spent in classroom (2 hours)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Play computer games/watch TV (1 hour)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Homework (30 minutes)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participation in organised sport (30 minutes)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel by car to school (15 minutes)</td>
<td></td>
</tr>
</tbody>
</table>

Because it’s so easy for children and young people to sit too much, it’s important for parents, carers, teachers and child care workers to encourage them to sit less and move more.

Why is sitting less better for children and young people?

Sitting less helps to reduce the risk of children and young people developing health and other problems in later life.

Watching television, using a computer and playing electronic games, which usually involve sitting for long periods of time, are a big part of children’s and young people’s leisure time. Therefore, children and young people who spend less time doing these things have better health than those who spend too much time doing these things.
Tips For Sitting Less – At Work

- Stand and take a break from your computer every 30 minutes  **NC**
- Take breaks in sitting time in long meetings **NC**
- Stand to greet a visitor to your workspace **NC**
- Use the stairs **NC**
- Stand during phone calls  $$?
- Walk to your colleagues desk instead of phoning or emailing **NC**
- Drink more water - going to the water cooler and toilet will break up sitting **NC**
- Move your bin away from your desk so you have to get up to use it **NC**
- Use a height-adjustable desk so you can work standing or sitting  $$
- Have standing or walking meetings **NC**
- Use headsets or the speaker phone during teleconferences so you can stand  $$?
- Eat your lunch away from your desk **NC**
- Stand at the back of the room during presentations **NC**

**NC** = No cost  $$ = Cost
Conclusions/Take Home Messages

• Sitting time is highly prevalent amongst office workers

• Solutions need to be sought to overcome the ‘normal’ state of prolonged sitting in the workplace

• The Full Picture: People should be encouraged to create opportunities to reduce and break up prolonged sitting time in addition to engaging in regular aerobic and strength-developing physical activities
Thank You for Listening

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Useful Resources

**Sitting is Deadly:** ABC Catalyst.
http://www.youtube.com/watch?v=NVNCm_Bqlfs

**Creating Healthy Workplaces Infographic:** VicHealth

**Sitting less for adults:** Heart Foundation of Australia
www.juststand.org
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