



THE UNIVERSITY OF  
SYDNEY



# The Stand@Work Study



Do sit-stand workstations  
reduce employees' sitting time?





There is a growing body of evidence that high levels of sedentary behaviour and sitting in particular are emerging risk factors for chronic disease.



Sedentary behaviour is a term used to describe activity that requires very low energy expenditure. Sedentary behaviour can include activities that involve sitting or reclining such as sitting at work, reading, sitting in transit, watching television, and using a computer – all of which require little physical effort.

In the workplace setting, sedentary behaviour is most often seen in the form of sitting at a desk – more often using a computer.

The Heart Foundation in collaboration with the Prevention Research Collaboration (PRC) of the University of Sydney conducted a study, titled Stand@Work, to determine whether providing sit-stand workstations changes sitting time in desk-based office workers.

The intervention was successful in reducing sitting time among the sit-stand workstation users by almost 20 per cent during work hours. The sit-stand workstations were generally well received and feasible for most participants.

The purpose of this case study is to summarise the study outcomes and share insights from the employees who trialled the workstations, as well as the views of senior managers. This resource is useful for employers or managers responsible for employee health and wellbeing. It can help to guide intervention decisions and provides further ideas for reducing sitting time in the workplace, and encouraging employees to move more while at work.





# Why focus on sedentary behaviour in the workplace?

The average Australian spends almost 33 hours per week at the workplace—with full time workers spending almost 40 hours per week at work<sup>1</sup>. In addition to this, those working full time in jobs that involve ‘mostly sitting’ spend an average of 6.3 hours per day sitting at work<sup>2</sup>. There is emerging evidence that shows an association between prolonged sitting and the risk of chronic diseases such as cardiovascular disease, type 2 diabetes, hypertension, stroke and premature mortality, even in physically active adults.<sup>3, 4, 5, 6</sup>

The use of sit-stand workstations in an office-based setting has been identified as one potential approach to reducing occupational sitting time.<sup>7, 8, 9</sup> To explore this further, the Stand@Work Study focused on the following research questions:

1. Does using a sit-stand workstation reduce office workers’ sitting time at work?
2. What impact does using a sit-stand workstation have on duration of total sitting time over the day, at work as well as out of work?
3. How acceptable was using the sit-stand workstation to workers in an open plan office?

## What did the Stand@Work study involve?

The Stand@Work study involved desk-based office workers in the Heart Foundation Sydney Office trialling a sit-stand workstation for a four week period at work. Interested workers were progressively entered into a ballot over a 12 month period and randomly assigned to either an ‘intervention’ or ‘control’ group. Those in the intervention group trialled a sit-stand workstation installed at their usual desk for four weeks, while the control group were on a waiting list for four weeks before they transitioned to the intervention and trialled the workstation, and so on. There were nine groups, involving 42 office-based employees in total.

An *Ergotron Workfit S* model workstation was used in the study, because it fitted easily to an existing desk, was simple to operate and could easily be moved to another desk. This kept costs down while allowing for a larger number of users. **Figure 1** shows the workstation being used in the standing position and **Figure 2** shows the sitting position. Participants were given instructions on how to use the workstation and also asked to complete an ergonomic self-assessment before they started their four week workstation trial.

## How were the outcomes measured?

Participants were assessed for sitting, standing and moving before and after using the sit-stand workstation with objective monitors and self-report questionnaires to see if any changes occurred over the trial period. After the trial, participants shared their experiences of using the sit-stand workstations in focus groups.

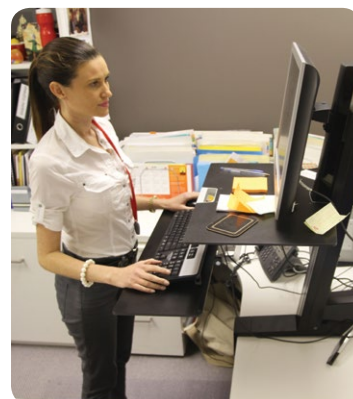


Figure 1

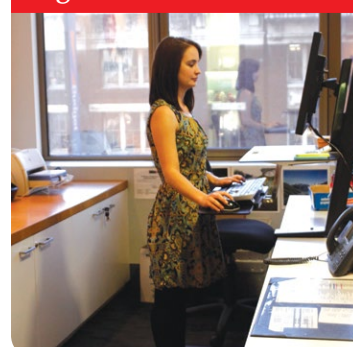


Figure 2

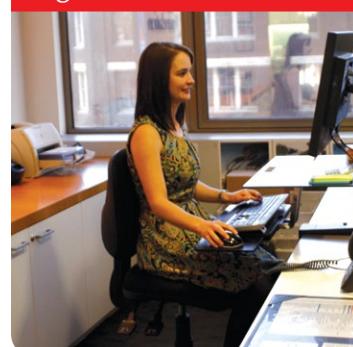


Figure 3

Proportion of time spent sitting, standing and walking at baseline

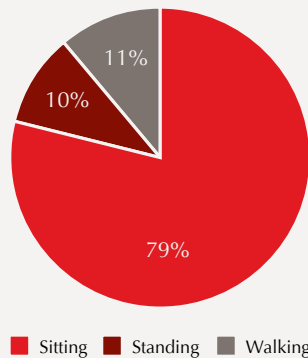
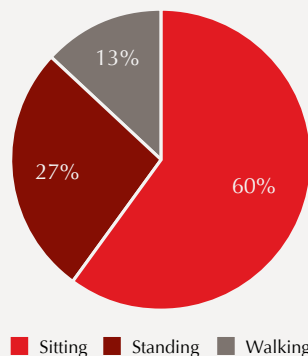


Figure 4

Proportion of time spent sitting, standing and walking after workstation trial



*'I stood first thing in the morning and it was a really nice way to start the day'*

– Study participant

## Results and findings

### Changes in time spent sitting

When study participants were measured before they trialled the workstation, it was found that they typically spent almost 80 per cent of their work day sitting, with the rest split between standing and walking (See **Figure 3**). After trialling the workstation for four weeks, there was a significant reduction in sitting time and significant increase in time spent standing at work in the intervention participants compared to those in the control condition, who did not change much (See **Figure 4**). This equated to around one hour less of sitting and an hour more of standing per day while at work. Other measures used found similar results.

### Patterns of sit-stand workstation use

From focus group discussion, some study participants had no particular routine with how they used the workstation, simply alternating between sitting and standing as they felt like it, or felt uncomfortable with their chosen position. For others, whether they chose to sit or stand was influenced by the task they were doing or the time of day. For example, tasks easily undertaken while standing included:

- Emailing
- Reading documents on screen
- Simple writing tasks

Tasks that were described as more difficult while standing included:

- Writing tasks that required space for materials to be laid out
- Talking on the phone, especially for those in an open plan office

Some participants routinely stood first thing in the morning, and standing after lunch and later in the day was also popular, when energy levels were usually lower.

### What encouraged employees to stand more?

Study participants talked about a range of factors that encouraged them to use the workstation in the standing position. These included:

- The ease of moving the workstation up and down
- Wearing comfortable, flat shoes
- Feeling physical benefits, such as less back pain, from sitting less
- Feeling more energetic and alert, especially later in the working day
- Perceived improvements in productivity from working while standing
- Seeing others standing, which acted as a visual prompt to also stand up
- A supportive work environment that accepted standing as normal practice, even in an open plan office
- Formation of a new habit over time, and developing the physical capacity to gradually stand for longer periods.





## What were the barriers to standing more?

A number of people initially felt self conscious standing, especially taking phone calls in the open plan office, or doing confidential work, for which they usually elected to sit down. For many, this feeling lessened over time, especially as more people participated in the study. Some employees felt they were more easily distracted when standing, or that it was inviting other people to interrupt them. The wrong type of footwear (for example, high heels) was also noted as a barrier among women. Finally, design limitations of the workstation model we trialled were an issue for a number of users.

Things specifically mentioned included:

- a wobbly keyboard platform
- physical discomfort, due to ergonomic differences in their desk set up
- loss of desk workspace
- limited maximum height adjustment, in the case of taller users.

It is worth noting that other models available can overcome many of these issues. Furthermore most of the barriers raised were related to workstation design, rather than the practice of standing, which was generally well accepted among our users.

## What were the views of senior managers?

After the study, a focus group discussion was held with senior managers to gather their views about the trial. Managers thought the introduction of sit-stand workstations was a good innovation, employees were supportive and they felt it was good for the organisations profile to be promoting alternatives to sitting all day. Potential issues were extra noise if people took phone calls standing up, or employees being more easily distracted, though it was felt this would lessen over time.

Some managers thought more people standing created a sense of openness and that employees could move about and interact more easily with each other. It was noted that partly retrofitting the existing office layout was not as effective or space saving as a purposely designed office fit out, and further evidence on the occupational health and safety benefits as well as evidence of continued use would strengthen the argument for additional investment. Positively, managers also described other simple actions that they or their staff had started to implement in an effort to break up extended sitting time each day.

*‘Standing up felt like a break, even though I was still doing my work’*

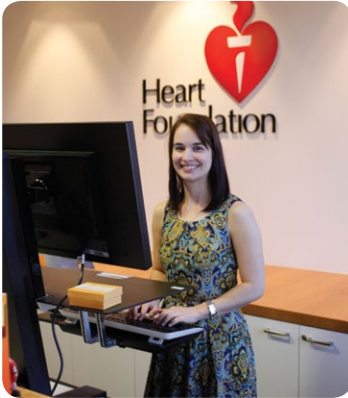
– Study participant

*‘When I’m on the phone standing up I feel a little bit self conscious because I feel like I’m shouting out across everyone’*

– Study participant

*‘I have noticed people standing up more in meetings’*

– Senior manager



## Conclusions

The Stand@Work study was successful in reducing sitting time and increasing standing time by about an hour each work day, among those who trialled the workstation. There were both enablers and barriers to standing while working, some of which were related to the design of the workstation used in the study, while others were influenced by the type of tasks being undertaken or the broader work environment. From this study, sit-stand workstations appear to be a feasible option for reducing sitting time in office based workers, at least in the shorter term. Most of the study participants said they would keep using the workstation if they had the option, indicating a high level of acceptability among users. It is interesting to note that over time, study participants felt less self-conscious about standing, as more people trialled the workstation, indicating that it is possible to create a 'sit less' culture among office workers.

## Where to from here?

The main challenge now is to work out whether these results are maintained in the longer term and whether they would apply to other workplaces. The Sydney office of the Heart Foundation currently has over thirty full time users of sit-stand workstations, so there is an opportunity to monitor use over a longer time period. As this study took place in a health organisation it is also possible that the participants were more aware of the potential health risks from extended sitting and may have been motivated to stand more. Therefore, further trials in other types of workplaces are needed to see whether we would find similar results. There is also a need to explore other, low cost ways to break up extended sitting time among workers and further studies are required before any firm conclusions can be made about which type of strategy employers should invest in.

Being active for at least thirty minutes most days of the week is still a priority for good health.

## A focus on physical activity is still important

It is important to note that evidence on the link between extended sitting and health outcomes is still emerging, so clear recommendations on sitting and health are not yet available. Additionally, very few studies have explored effective ways to encourage less sitting at work, especially over the longer term. On the other hand, there is a wealth of compelling evidence on the health benefits of physical activity and clear guidance for workplaces about how they can support their employees to be more active both during and outside of work.

Therefore, an important message is that being active for at least 30 minutes most days of the week is still a priority for good health. In addition, finding ways to reduce daily sitting time could be beneficial, although it is advised not to stand all day either, but rather to alternate positions throughout the day.







## Further ideas for workplaces

There are a number of ways that office-based workplaces can support a 'sit less' and 'move more' culture within their organisation. These range from simple, low cost options through to changes in office furniture and design. For example:

- Inclusion of a standing break during meetings – make it a 'standing agenda' item
- Displaying posters that encourage standing breaks and stair use
- Utilising software that prompts employees to stand up and/or take a break from their computer
- Providing suggested local routes for walking meetings
- Provision of height adjustable meeting room tables
- Installing height adjustable 'hot-desks' that employees can share
- Offering employees sit-stand workstations or height adjustable desks, in lieu of traditional desks.

There are many ways employees can move more and decrease extended sitting time throughout their working day. Simple tips include:

- Using the stairs instead of the lift
- Standing and taking a regular break from your computer, such as every 30 minutes
- Taking a standing break during meetings, or trying a standing meeting – they tend to be shorter too
- Standing to greet a visitor to your workspace
- Walking to a colleague's desk instead of phoning or emailing
- Drinking more water – going to the water cooler and toilet will break up sitting time
- Moving the bin away from your desk so you have to get up more regularly
- If meeting with one or two people, trying a walking meeting instead
- Using headsets or the speaker phone during teleconferences to allow standing
- Eating lunch away from the desk
- Standing at the back of the room during presentations.



(Above) A walking meeting works well for small groups.

## Further reading and resources

### How to be more active:

Information and statistics on the health and non-health benefits of physical activity.

[www.heartfoundation.org.au/active-living/why-active-living/Pages/default.aspx](http://www.heartfoundation.org.au/active-living/why-active-living/Pages/default.aspx)

### Sitting Less – fact sheet for adults:

A fact sheet that provides evidence on the negative effects of prolonged sitting in adults. This factsheet also offers tips and practical strategies on how to decrease sitting time.

[www.heartfoundation.org.au/active-living/Documents/PA-Sitting-Less-Adults.pdf](http://www.heartfoundation.org.au/active-living/Documents/PA-Sitting-Less-Adults.pdf)

### Healthy Workplace Guide:

A practical, evidence-based ten step guide developed through a collaboration between the Heart Foundation, Cancer Council NSW and the Physical Activity, Nutrition & Obesity Research Group (PANORG) from the School of Public Health at the University of Sydney. This guide provides easy to follow steps on creating a workplace that supports employees in leading healthy lifestyles, including how to get started, construct and implement a workplace health program.

[www.heartfoundation.org.au/active-living/get-active/Pages/Workplace-wellness.aspx](http://www.heartfoundation.org.au/active-living/get-active/Pages/Workplace-wellness.aspx)

### Sit less workplace posters:

A range of four posters that act as a visual cue to prompt workers to stand or move more frequently in a workplace setting. These posters also provide imagery on ways that people can reduce extended sitting throughout the day.

[www.heartfoundation.org.au/active-living/get-active/Pages/Workplace-wellness.aspx](http://www.heartfoundation.org.au/active-living/get-active/Pages/Workplace-wellness.aspx)

### Workplace walking:

An adapted version of the Heart Foundation Walking program specifically for workplaces, which offers a flexible approach to workplace physical activity programming.

[www.heartfoundation.org.au/active-living/walking/Pages/Workplace.aspx](http://www.heartfoundation.org.au/active-living/walking/Pages/Workplace.aspx)

### How to conduct a walking meeting:

This resource provides practical tips on how to conduct an effective walking meeting- a productive way to work, sit less and be active at work

[www.victoriawalks.org.au/Assets/Files/How%20to%20conduct%20a%20walking%20meeting.pdf](http://www.victoriawalks.org.au/Assets/Files/How%20to%20conduct%20a%20walking%20meeting.pdf)

### Sedentary Work Practices Toolkit:

A collection of information, guidance materials and templates that can help workplaces develop and apply an organisational strategy to reduce prolonged sitting in the workplace.

[http://www.comcare.gov.au/preventing/hazards/physical\\_hazards/sedentary\\_work/sedentary\\_work\\_practices\\_toolkit](http://www.comcare.gov.au/preventing/hazards/physical_hazards/sedentary_work/sedentary_work_practices_toolkit)





## Evidence review – reducing prolonged sitting in the workplace:

A review identifying evidence from the Australian and international literature that could suggest initiatives with the potential to impact on reducing workplace sitting (prolonged, unbroken sitting time).

[http://www.vichealth.vic.gov.au/~media/ResourceCentre/PublicationsandResources/Economic%20participation/2012%20workplace/CHW\\_Sitting\\_Full\\_Web\\_Final.ashx](http://www.vichealth.vic.gov.au/~media/ResourceCentre/PublicationsandResources/Economic%20participation/2012%20workplace/CHW_Sitting_Full_Web_Final.ashx)

## References

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4. Healy GN, Matthews CE, Dunstan DW, et al. Sedentary time and cardio-metabolic biomarkers in US adults: NHANES 2003–06. *Eur Heart J* 2011;32:590–7.
5. Van der Ploeg HP et al, Sitting Time and All-Cause Mortality Risk in 222 497 Australian Adults, *Arch Intern Med*. 2012;172(6):494-500
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9. Gilson, Nicholas D., et al. “Does the use of standing ‘hot’desks change sedentary work time in an open plan office?” *Preventive medicine* 54.1 (2012): 65-67.

## Acknowledgments

The Stand@Work study team would like to thank the staff from the Heart Foundation who volunteered to be participants in this study.



Stand more,



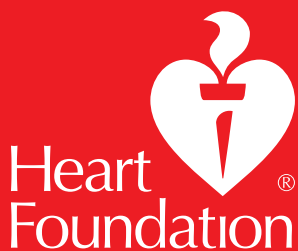
Sit less,



Move more.

## Notes





For heart health information  
1300 36 27 87  
[www.heartfoundation.org.au](http://www.heartfoundation.org.au)

**Australian  
Capital Territory  
Canberra**

Unit 1, Level 1,  
17-23 Townshend Street,  
Phillip ACT 2606  
Tel: (02) 6282 5744

**New South Wales  
Sydney**

Level 3, 80 William Street  
Woolloomooloo NSW  
2011  
Tel: (02) 9219 2444

**Illawarra**

Kiama Hospital and  
Community Health Service  
Bonaira Street  
Kiama NSW 2533  
Tel: (02) 4233 0133

**Newcastle and Hunter**

32 Brunker Road  
Broadmeadow NSW 2292  
Tel: (02) 4922 1547

**Tamworth and  
New England**

Alliance People Solutions,  
Level 1, 307 Peel Street  
Tamworth NSW 2340  
Tel: (02) 6766 1394

**Northern Territory  
Darwin**

Darwin Central Offices  
Level 3, 21 Knuckey Street  
Darwin NT 0800  
Tel: (08) 8981 1966

**Queensland**

**Brisbane**

557 Gregory Terrace  
Fortitude Valley QLD 4006  
Tel: (07) 3872 2500

**South Australia**

**Adelaide**

155-159 Hutt Street  
Adelaide SA 5000  
Tel: (08) 8224 2888

**Tasmania**

**Hobart**

Level 1, 89 Brisbane Street,  
Hobart, TAS 7000  
Tel: (03) 6224 2722

**Victoria**

**Melbourne**

Level 12, 500 Collins Street  
Melbourne VIC 3000  
Tel: (03) 9329 8511

**Western Australia**

**Perth**

334 Rokeby Road  
Subiaco WA 6008  
Tel: (08) 9388 3343