



**Baker IDI**

HEART & DIABETES INSTITUTE

# Reducing Prolonged Sitting : Stand Up Victoria

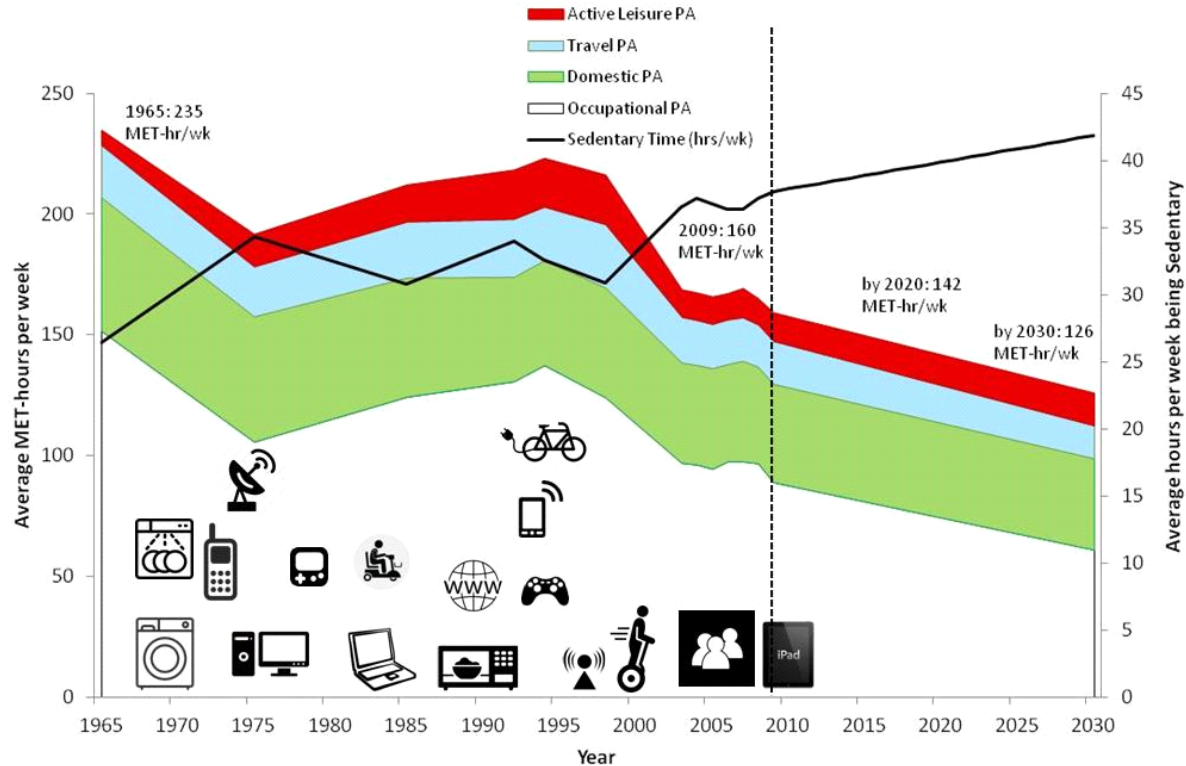
**Professor David Dunstan**

Baker IDI Heart & Diabetes Institute

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# The Sitting Generation - USA



Source: Ng & Popkin (2012) *Obesity Rev*: 13: 659-680

# Environmental Determinants of Physical Activity and Sedentary Behavior

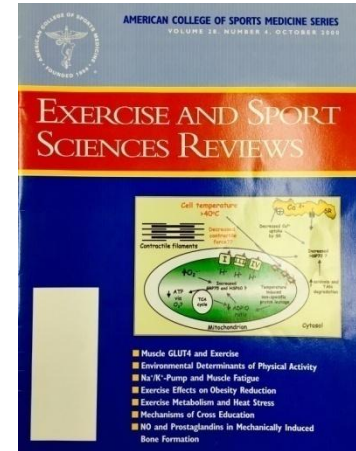
Neville Owen,<sup>1</sup> Eva Leslie,<sup>1</sup> Jo Salmon,<sup>2</sup> and Michael J. Fotheringham<sup>2</sup>

<sup>1</sup> University of Wollongong, Wollongong, Australia, and <sup>2</sup> Deakin University, Melbourne, Australia.



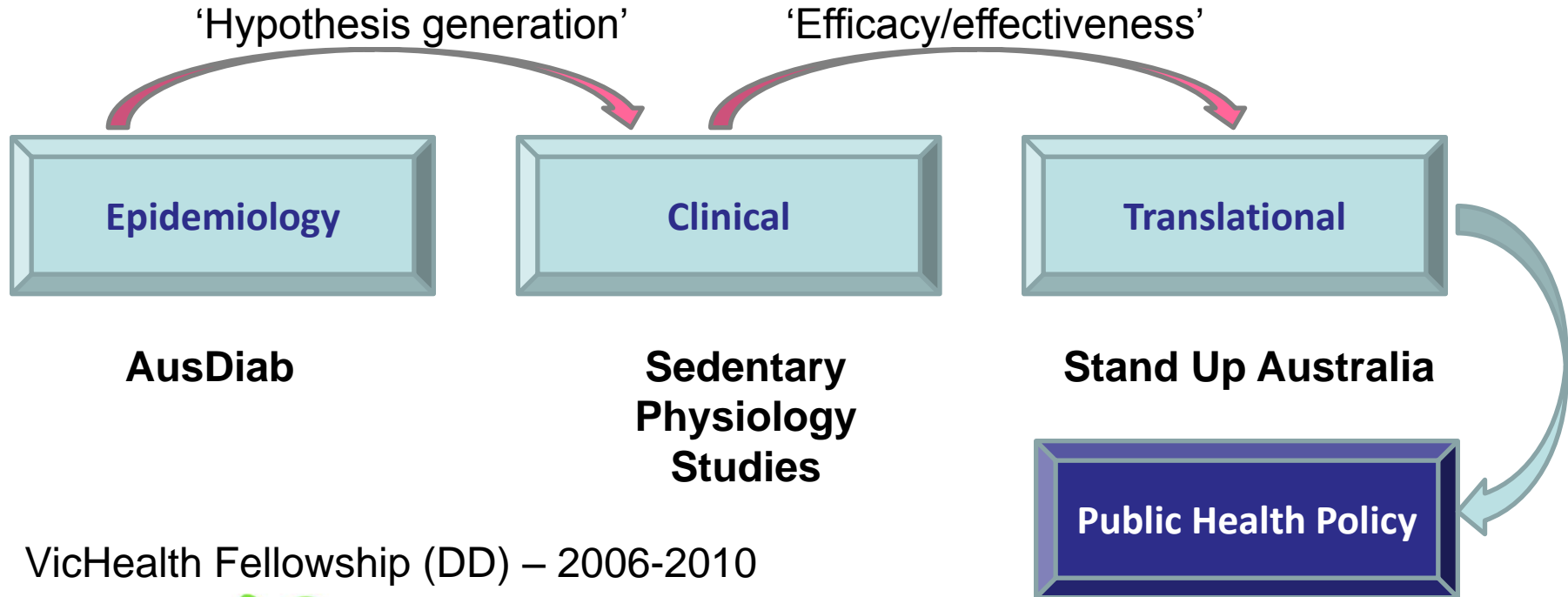
“Although sedentary behavior may arguably be conceptualized as no more than the other side of the physical activity (exercise) coin, we see it as a class of behaviours that can coexist with and also compete with physical activity (exercise)”

“Thus it may be helpful to explore sedentary behavior as a unique attribute in its own right and to examine what is known about some of its outcomes”



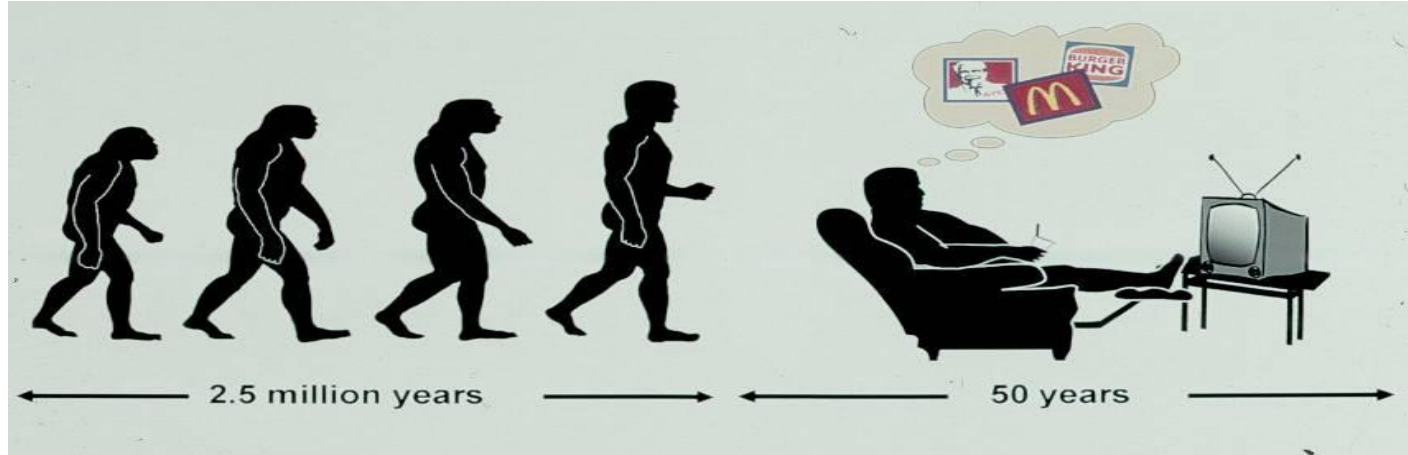
Owen et al.  
*Exerc Sport Sci Rev* 28: 53-158  
2000

# *‘Understanding and Influencing Sedentary Behaviour in Adults’*



VicHealth Fellowship (DD) – 2006-2010

# High Television Viewing (2-4+ hrs/d)



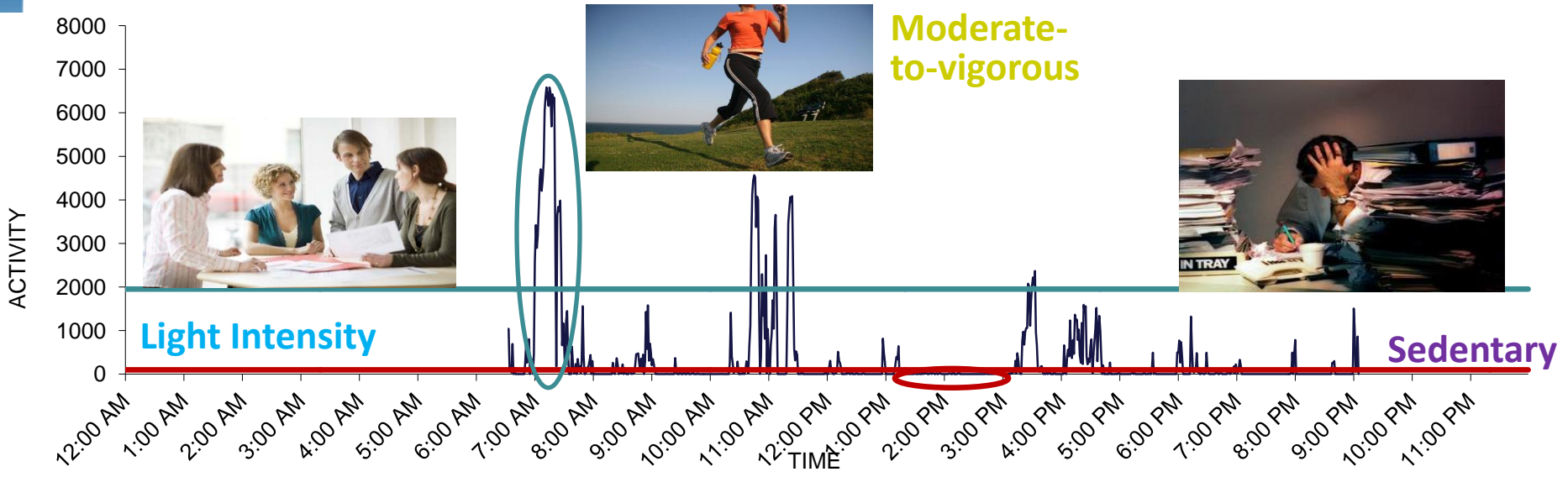
- Overweight/ Obesity<sup>1</sup>
- Abnormal glucose<sup>2</sup>
- Dyslipidemia<sup>3</sup>
- Metabolic syndrome<sup>3</sup>

<sup>1</sup> Cameron et al. 2003; <sup>2</sup> Dunstan et al. 2004, <sup>3</sup> Dunstan et al. 2005

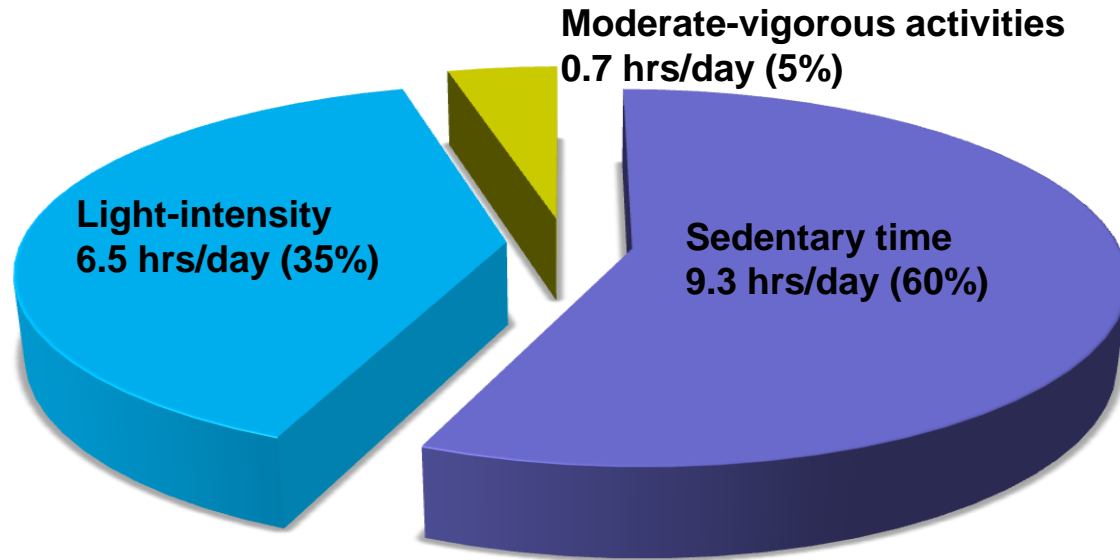
# Measuring Sedentary Time

## Accelerometers

- Small, lightweight, unobtrusive
- Record the time, duration, frequency, & ***intensity*** of walking or running movements

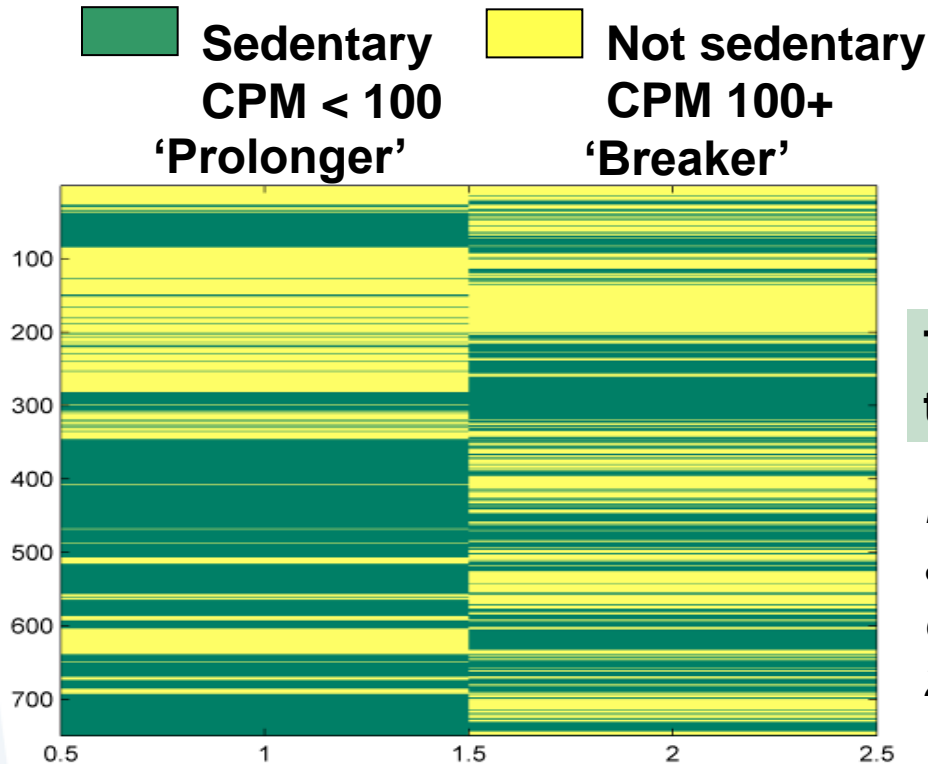


# How Australian Adults' Overall Daily Behaviour Patterns Are Distributed Between Physically-Active and Sedentary Time



Mix of working & non-working adults aged 30-87 years

# It is also important how sitting time is accumulated!



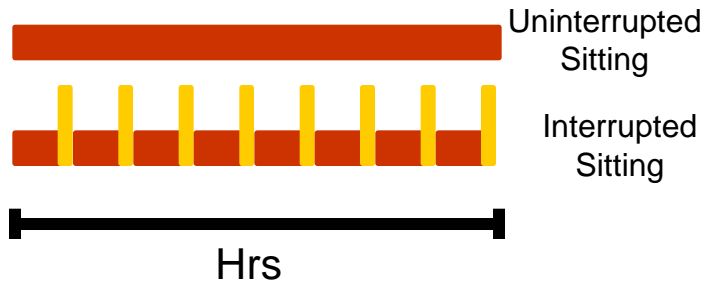
These two people have exactly the same sedentary time

***More breaks from sitting time associated with lower average waist circumference, BMI, triglycerides, and 2-hr plasma glucose***

Healy, G.N., Dunstan, D.W., Salmon, J., Cerin, E., Shaw, J.E., Zimmet, P.Z. and Owen, N. (2008). Breaks in sedentary time: Beneficial associations with metabolic risk. *Diabetes Care*, 31, 661-666.

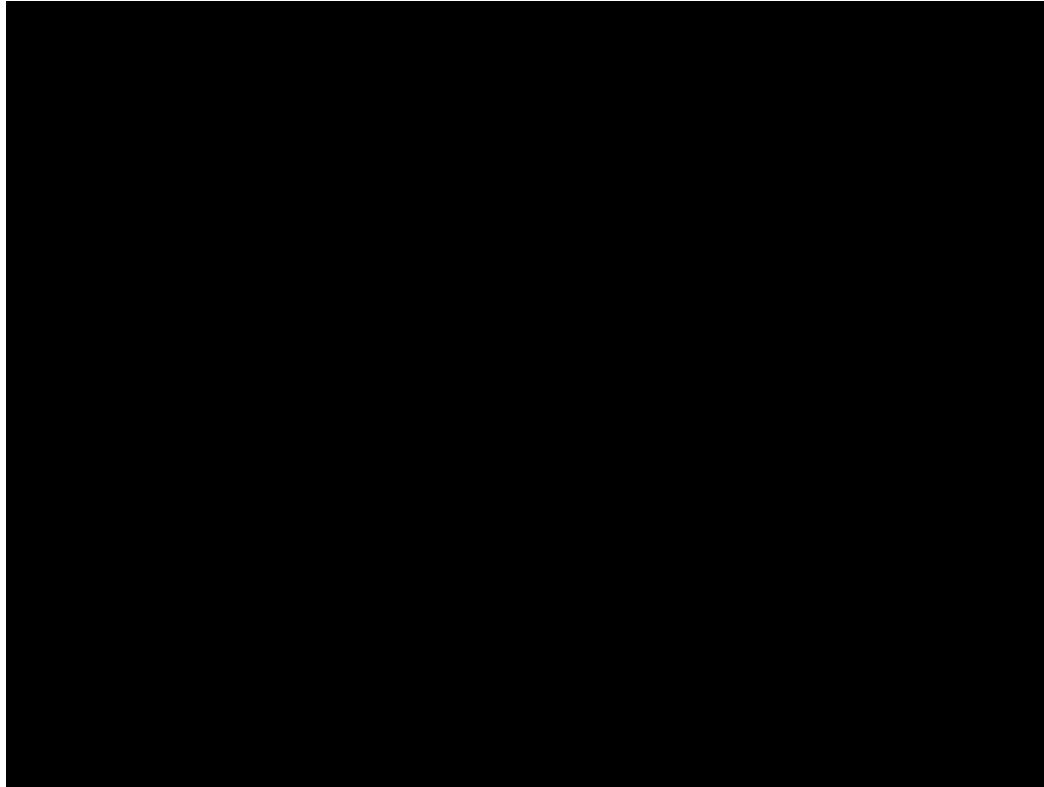


# Interrupting Sitting Time – Impact on Health Markers



- **↑** Blood glucose control (Dunstan *et al.* 2012)
- **↓** Plasma fibrinogen (Howard *et al.* 2013)
- **↓** Blood Pressure (Larsen *et al.* 2014)

# Translation – The ‘Rise and Recharge’ App





Owen (Lead Investigator)

# Centre of Research Excellence on Sitting Time & Chronic Disease Prevention

## Theme 1

### Measurement



Healy



Trost



Winkler

## Theme 2

### Mechanisms



Kingwell



Dunstan



Lambert

## Theme 3

### Interventions



Salmon



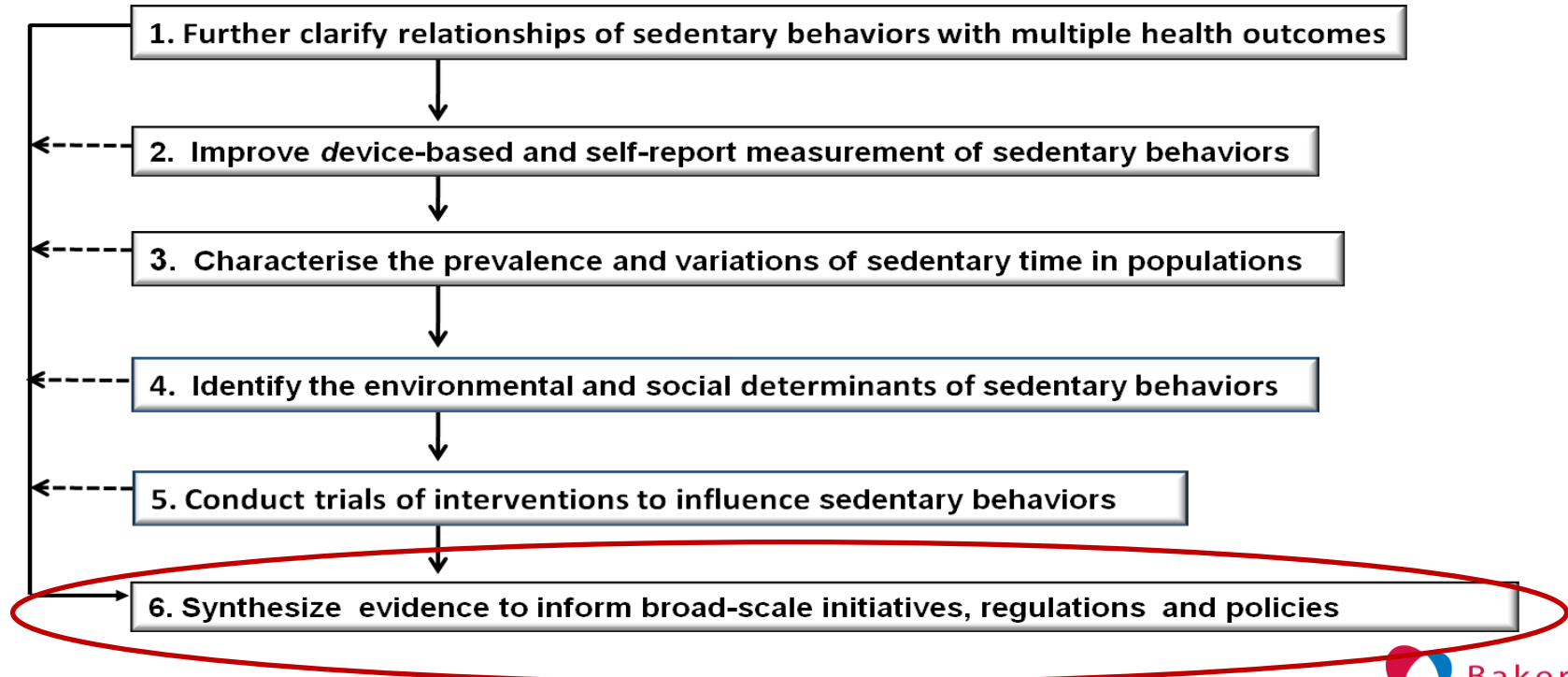
Eakin



Timperio

+ a number of International & National Associate Investigators

# Sedentary Behaviour Research Strategy – Behavioural Epidemiology




# Translation & Dissemination

medibank  
HEALTH PARTNER

## Stand Up Australia Sedentary behaviour in workers

August 2009



Research into off-peak, 24-hour medical diagnostic laboratories revealed that 77 percent of the working day is spent sitting.

- Instead of a 90-minute break, 10 minutes of high intensity activity can lead to equivalent health benefits of "not sitting at all" for 30 minutes.
- Participants who stood passively had had much higher levels of physical activity than they did without standing objectively.
- Prolonged sitting time in the workplace is an addressable health risk.

2009

Heart Foundation

## 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 very easy to sit too much – adults spend more than half of their waking hours sitting.<sup>1-3</sup> Therefore, to reduce your risk of health problems, it's important to be aware of how much you sit and to sit more often 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).<sup>4</sup>

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 still sit for long periods of time every day. Figure 1 (see page two) 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 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 short as standing up) can help to reduce your risk factors for developing coronary heart disease and diabetes.

Sit less, move more  
HEALTH PARTNER

2011

the CSIRO and BAKER IDI

## Diabetes Diet and Lifestyle Plan



- Practical ideas for weight and glucose control
- Exercise program for all fitness levels
- Checklists for diabetes prevention and control

Includes more than 60 delicious, diabetes-friendly recipes

CSIRO Baker IDI HEART & DIABETES INSTITUTE

# 5 Active living

Sit less, move more, move more often.

2011

2014

Heart Foundation



## Blueprint for an active Australia

Government and community actions to increase population levels of physical activity and reduce sedentary behaviour in Australia, 2014–2017

Second edition



MOVE MORE SIT LESS!



# Policy & Practice

## SEDENTARY WORK EVIDENCE ON AN EMERGENT WORK HEALTH AND SAFETY ISSUE

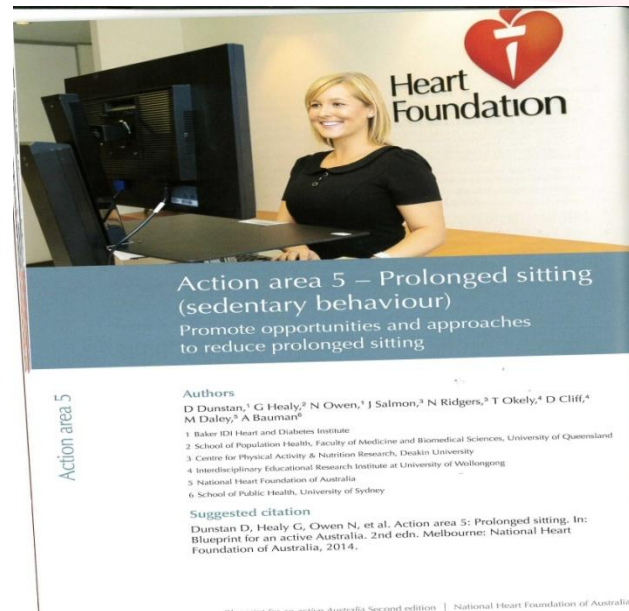


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Consensus statement

## The sedentary office: a growing case for change towards better health and productivity. Expert statement commissioned by Public Health England and the Active Working Community Interest Company

John P Buckley,<sup>1</sup> Alan Hedge,<sup>2</sup> Thomas Yates,<sup>3,4</sup> Robert J Copeland,<sup>5</sup>  
Michael Loosemore,<sup>6</sup> Mark Hamer,<sup>6</sup> Gavin Bradley,<sup>7</sup> David W Dunstan<sup>8</sup>