BeUpstanding™

References

The information provided in the BeUpstanding Champion Toolkit is based on the best available evidence. Below are the links to the references that informed the Toolkit. The latest research news will also be regularly featured in the BeUpstanding Blog. http://beupstanding.blog/

Key recommended references [all freely accessible] [1-5 6 7]

Safe Work Australia: Sedentary work – evidence on an emergent work health and safety issue.

This review from Safe Work Australia provides an excellent summary and overview of sedentary work as an emergent work health and safety issue.

https://www.safeworkaustralia.gov.au/system/files/documents/1702/literature-review-of-the-hazards-of-sedentary-work.pdf

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VicHealth: Reducing prolonged sitting in the workplace: an evidence review

Comprehensive evidence-based review conducted in 2012 by researchers from the University of Queensland and Baker Heart and Diabetes Institute. The review was commissioned by VicHealth and includes a number of case studies of workplace interventions for reducing sedentary behaviour.

https://www.vichealth.vic.gov.au/~/media/resourcecentre/publicationsandresources/economic%20participation/2012%20workplace/chw_sitting_full_web_final.ashx

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Heart Foundation: Sitting less for adults

This short publication from the Heart Foundation provides some useful tips for reducing sitting time at home, at work and during transport.

https://heartfoundation.org.au/images/uploads/main/Active_living/Sitting_less_adults.pdf

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Heart Foundation: Blueprint for an active Australia

This publication includes short evidence summaries written by researchers and leaders across 13 action areas relating to physical activity (e.g. built environments, workplaces, prolonged sitting, disadvantaged populations, and Aboriginal and Torres Strait Islander peoples). Each summary provides specific and practical recommendations designed to promote and increase physical activity levels.

https://heartfoundation.org.au/images/uploads/publications/Blueprint-for-an-active-Australia-second-edition.pdf

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Comcare: Sedentary Work

Advice from Comcare (Federal Government agency) about the risks associated with sedentary work and some suggested strategies to reduce exposure.

https://www.comcare.gov.au/preventing/hazards/physical_hazards/sedentary_work

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NIOSH: Using Total Worker Health concepts to reduce the health risks from sedentary work

Short publication from the United States National Institute for Occupational Safety and Health about sedentary work, with a focus on strategies targeting the physical and organisational work environment. 'Total Worker Health' programs aim to combine traditional work health and safety approaches with health promotion approaches.

https://www.cdc.gov/niosh/docs/wp-solutions/2017-131/pdfs/2017-131.pdf

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Australia's Physical Activity and Sedentary Behaviour Guidelines

This webpage from the Federal Government Department of Health outlines Australia's national guidelines for the recommended amount of time that adults should spend in physical activity and sedentary behaviour.

http://www.health.gov.au/internet/main/publishing.nsf/Content/fs-18-64years

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ADDITIONAL REFERENCES

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Addressing workplace sitting

Workplace interventions for reducing sitting at work.

Comprehensive Cochrane systematic review published in 2016 that summarises peer-reviewed papers investigating workplace interventions for reducing sitting at work.

Full report (136 pages)

http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD010912.pub3/epdf

Short summary

http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD010912.pub3/abstract

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The sedentary office: an expert statement on the growing case for change towards better health and productivity ($)

Expert statement published in 2015 that provides evidence-based recommendations relating to how much time desk-based workers should spend sitting and standing in the workplace.

http://bjsm.bmj.com/content/bjsports/49/21/1357.full.pdf

Reducing occupational sedentary time: a systematic review and meta-analysis of evidence on activity-permissive workstations

Systematic review published in 2014 of studies investigating the effect of activity-permissive workstations (height-adjustable/sit-stand workstations, treadmill desks, pedal, stepping devices) on sitting time, health and work outcomes. The review found that activity-permissive workstations effectively reduce sitting time without detrimentally affecting work performance.

http://onlinelibrary.wiley.com/doi/10.1111/obr.12201/full

Prolonged sedentary time and physical activity in workplace and non-work context: a cross-sectional study of office, customer service and call centre employees

One of the first studies to report objectively-measured activity levels of desk-based workers – including workers from offices, call centres and customer service workplaces. Overall, these workers were found to spend 77% of their working hours sedentary.

https://ijbnpa.biomedcentral.com/articles/10.1186/1479-5868-9-128

The BeUpstanding Program™: Scaling up the *Stand Up Australia* Workplace Intervention for Translation into Practice

Journal article published in 2016 that describes the processes involved in developing the BeUpstanding program. This includes the steps that were taken to work with industry partners to scale up and translate resources from the Stand Up Australia intervention.

http://www.aimspress.com/article/10.3934/publichealth.2016.2.341

Iterative development of Stand Up Australia: a multi-component intervention to reduce workplace sitting

Journal article published in 2014 that describes the methodology and processes involved in developing the Stand Up Australia intervention, including a description of the intervention strategies.

https://ijbnpa.biomedcentral.com/articles/10.1186/1479-5868-11-21

Standing-based office work shows encouraging signs of attenuating post-prandial glycaemic excursion ($)

http://oem.bmj.com/content/71/2/109.long

Experimental study comparing the effects of standing vs sitting on post-meal glucose levels in a group of office workers. Glucose levels were found to be lower when the workers spent the afternoon working at a standing desk compared to a separate day when they performed their work sitting down.

Excessive occupational sitting is not a "safe system of work": time for doctors to get chatting with patients

Commentary piece published in the Medical Journal of Australia in 2014 arguing that sedentary work should be considered a work health and safety issue, and that doctors may have a role in prescribing workers with activities to reduce and break up their sitting time.

https://www.mja.com.au/journal/2014/201/3/excessive-occupational-sitting-not-safe-system-work-time-doctors-get-chatting?

Medibank Private: Stand Up Australia: Sedentary behaviour in workers

http://www.medibank.com.au/Client/Documents/Pdfs/Stand_Up_Australia.pdf

Findings from a study conducted with Medibank Private that measured activity levels from 131 office workers – at work and outside of work – using objective (accelerometers) and self-report (questionnaires) methods.

The contribution of office work to sedentary behaviour associated risk

Journal article published in 2013 that assessed activity levels measured objectively in a group of 50 Australian office workers. The study found that the workers spent 81.8% of their work hours sedentary, compared to 68.9% of non-work time.

https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-13-296

Economic impacts

18-23

The cost of physical inactivity

Report published by Medibank Private estimating that the economic costs of physical inactivity to the Australian economy were $13.8 billion in 2008. The report included estimates of costs in terms of healthcare costs, economy wide productivity costs and mortality costs.

http://www.medibank.com.au/client/documents/pdfs/the_cost_of_physical_inactivity_08.pdf

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The cost of work related injury and illness

Report produced by Safe Work Australia reporting on the estimated cost of work-related injury and illness for employers, workers and the community in 2012-13 – estimated to be $61.8 billion.

http://www.safeworkaustralia.gov.au/sites/swa/statistics/cost-injury-illness/pages/cost-injury-illness

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The Health of Australia's workforce

Report by Medibank Private outlining research showing links between employees' health and wellbeing and their productivity (e.g. self-rated performance, sick leave).

https://www.medibank.com.au/Client/Documents/Pdfs/The_health_of_Australia's_workforce.pdf

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Sick at work

2011 report by Medibank Private outlining research about the economic effects of presenteeism (when workers come to work but are not fully productive due to illness or other medical conditions). It was estimated that presenteeism cost the economy $34.1 billion in 2009/10.

http://www.medibank.com.au/client/documents/pdfs/sick_at_work.pdf

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Benefits to business: the evidence for investing in worker health and wellbeing

Short publication from Comcare summarising research findings that demonstrate the business benefits of investing in worker health and wellbeing. These include positive effects on health, engagement, productivity and recognition as an employer of choice.

https://www.comcare.gov.au/__data/assets/pdf_file/0006/99303/Benefits_to_business_the_evidence_for_investing_in_worker_health_and_wellbeing_PDF,_89.4_KB.pdf

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The link between workforce health and safety and the health of the bottom line: tracking market performance of companies that nurture a "culture of health". ($)

A research study that assessed the stock market performance of companies based on their investment in worker health and safety programs. A portfolio comprising companies that were recognised as award winning in their approach to health and wellbeing was found to perform significantly better than the market.

https://www.ncbi.nlm.nih.gov/pubmed/24013656

Health impacts of too much sitting

24-37

Physiological and health implications of a sedentary lifestyle ($)

Review paper published in 2010 that introduced the term "sedentary physiology". The researchers argued the need for a focus on sedentary behaviour that was distinct from the study of physical inactivity.

http://www.nrcresearchpress.com/doi/pdf/10.1139/H10-079

Too little Exercise and Too Much Sitting: Inactivity Physiology and the Need for New Recommendations on Sedentary Behavior

Review paper published in 2008 summarising the available epidemiological and experimental evidence linking sedentary behaviour with adverse health outcomes. The paper also recommended including sedentary behaviour in physical activity and public health guidelines.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3419586/

Too much sitting: the population health science of sedentary behaviour

Review paper published in 2010, incorporating evidence from studies using objective measures of sedentary behaviour and proposing research directions for the sedentary behaviour field.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3404815/

Too much sitting: a health hazard

Review paper published in 2012 summarising the available epidemiological and experimental evidence and highlighting the potential public health and clinical implications of too much sitting.

http://media.healthdirect.org.au/publications/Health%20hazards%20too%20much%20sitting%202012%20Australian.pdf

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Sedentary time and its association with risk for disease incidence, mortality, and hospitalization in adults. A systematic review and meta-analysis. ($)

Systematic review of 47 studies, published in 2015, that found high levels of sitting time to be associated with increased risk of mortality, cardiovascular disease and type 2 diabetes, even after adjusting for physical activity levels.

http://annals.org/aim/article/2091327/sedentary-time-its-association-risk-disease-incidence-mortality-hospitalization-adults

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Individual and work related risk factors for neck pain among office workers: a cross sectional study.

Study conducted in office workers that assessed the prevalence and risk factors associated with self-reported neck pain. Risk factors included often sitting for a prolonged period of time and experiencing mental tiredness. Being physically active reduced the risk of neck pain.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2213555/

Sitting-time, physical activity and depressive symptoms in mid-aged women

Large study of Australian mid-aged women that assessed the associations between sitting time, physical activity and depressive symptoms. Women who sat for more than seven hours per day were more likely to report depressive symptoms than those who reported sitting for 4 hours or less. Depressive symptoms were also more likely in women who did not report doing any physical activity.

http://www.ajpmonline.org/article/S0749-3797(13)00319-X/pdf

Sitting time and all-cause mortality risk in 222 497 Australian adults

Large study using data from the 45 and Up Study (study that involves approximately 11% of adults in New South Wales aged 45 years or older, followed up over time) to assess the possible link between sitting time and risk of dying prematurely. It was estimated that 7% of all deaths could have been prevented if exposure to high levels of sitting was reduced.

http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1108810

Managing sedentary behavior to reduce the risk of diabetes and cardiovascular disease

Review article that outlines the potential benefits of reducing sitting time for reducing the risk of diabetes and cardiovascular disease, and as a potential tool in the management of type 2 diabetes.

http://link.springer.com/article/10.1007%2Fs11892-014-0522-0

Muscle activity and inactivity periods during normal daily life

Experimental study that measured leg muscle activity (quadriceps and hamstrings) during a range of everyday tasks. The study found that muscle activity during standing is almost 2.5 times higher than during sitting.

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0052228

Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis.

Systematic review published in 2012 combining findings from 18 studies that looked at associations between sedentary behaviour and adverse health outcomes. High levels of sedentary time were found to be associated with increased risk of diabetes, cardiovascular disease and mortality, and all-cause mortality.

http://link.springer.com/article/10.1007%2Fs00125-012-2677-z

Long-term sedentary work and the risk of subsite-specific colorectal cancer

Australian study that assessed the association between exposure to sedentary work and colorectal cancers. Participants who had spent at least ten years in sedentary work were found to have increased risk of distal colon cancer and rectal cancer (but not proximal colon cancer) compared to participants who had not been exposed to long-term sedentary work.

https://academic.oup.com/aje/article-lookup/doi/10.1093/aje/kwq513

Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women

Study published in 2016 that aimed to assess the extent to which physical activity counteracts the increased mortality risk associated with sedentary behaviour. Combining data from more than 1 million men and women (16 individual studies), it was found that higher levels of physical activity reduced the increased mortality risk associated with high levels of sitting. However, it was found that approximately 60-75 min/day of moderate intensity physical activity was needed to offset the risk of premature mortality associated with high levels of sitting.

http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)30370-1/abstract

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Muscle activation and energy expenditure of sedentary behavior alternatives in young and old adults

iopscience.iop.org/article/10.1088/0967-3334/37/10/1686/pdf

Study that measured muscle activation and energy expenditure during sitting and four other tasks (including standing, sitting on a stability ball, or sitting interrupted by standing or walking). Energy expenditure was found to be greater in the stability ball, standing, and sit/walk conditions, compared to sitting. Muscle activation was only greater in the sit/walk condition.

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http://www.health.gov.au/internet/main/publishing.nsf/Content/fs-18-64years accessed 14th February, 2014 2014.
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