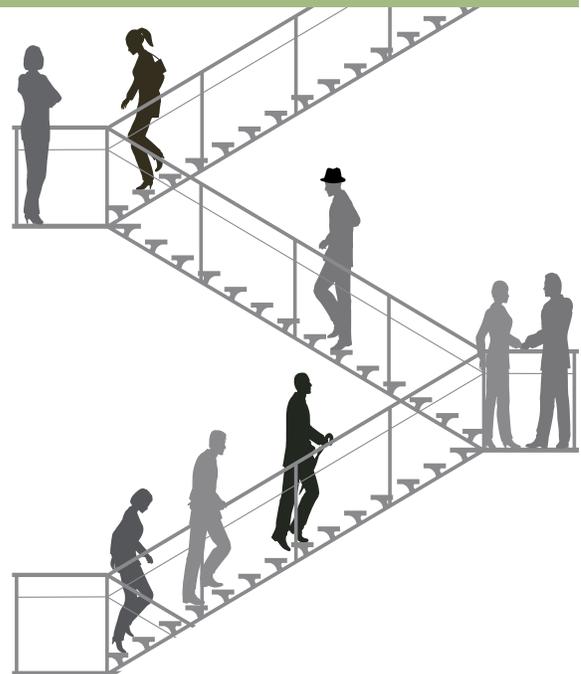




Increasing Physical Activity and Decreasing Sedentary Behaviour in the Workplace

Executive Summary

September 2015



REPORTS IN THIS SERIES:

- Executive Summary
- Summary 1: Challenges and Competitions
- Summary 2: Information and Counselling
- Summary 3: Organizational Culture and Norms
- Summary 4: Access and the Physical Environment

ALBERTA CENTRE FOR
Active Living



BACKGROUND INFORMATION

The purpose of this review is to identify the best workplace interventions to support employees moving more and sitting less.

Physical Activity: Physical activity refers to any movement with a substantial increase in resting energy expenditure.¹ Canadians are recommended to engage in a minimum of 150 minutes of moderate-to-vigorous physical activity per week.² According to accelerometer data, only 15% of Canadians achieve this recommendation.³ Adults are considered “physically inactive” if they do not meet this recommendation regularly. Physically inactive adults are at greater risk of developing cardiovascular disease, type 2 diabetes, obesity, or some forms of cancer.⁴

Sedentary Behaviour: Sedentary behaviour refers to sitting or lounging activities during waking hours.⁵ Currently, Canada does not have national guidelines for sedentary behaviour. High rates of sedentary behaviour have been associated with adverse physiological outcomes, such as all-cause mortality, cardiovascular disease, cancer (breast, colon, colorectal, endometrial, and epithelial ovarian), and type 2 diabetes.⁶ These adverse physiological outcomes are independent and distinct from physical inactivity outcomes.⁶ On average, a person spends more than one half of their waking day engaging in sedentary behaviours.⁷ Common sedentary behaviours include screen time activities, eating, commuting in a car, or working on a computer at the workplace.

Given that individuals spend the majority of their waking hours at the workplace, workplaces are ideal locations to implement health and wellness interventions.

Systematic Review of Workplace Interventions: The Alberta Centre for Active Living completed a systematic review on workplace interventions that focus on increasing physical activity, reducing sedentary behaviour, or both (systematic review was registered with PROSPERO: CRD42015019398).⁸ The studies selected for the review were limited to those with healthy adult participants over 18 years of age that worked in a full-time or part-time capacity. This review included various study designs with a control group or comparator group (e.g., randomized trials, controlled before-after studies, non-randomized trials), while other eligible studies had multiple time points but did not have a comparator (e.g., repeated measures studies).

The primary outcomes assessed were changes in physical activity and sedentary behaviour. Secondary outcomes were specifically relevant to workplaces, such as absenteeism or sick days, presenteeism or work productivity, quality of life, and mental or physical wellbeing.

FINDINGS



The systematic review identified 4,545 articles from 13 databases, which examined the effectiveness of workplace interventions on physical activity and sedentary behaviour. A total of 47 articles fit the criteria of this review.

The study findings and quality of the studies were assessed according to the type of workplace intervention. Findings and recommendations specific to four types of intervention are reported in the intervention-specific documents in this series.

Four distinct, yet interrelated groups, emerged based on common themes. The four groups, with examples of interventions, are:

1) CHALLENGES AND COMPETITIONS

- Create pedometer challenges to increase steps per day.
- Provide physical activity and sitting logs.

2) INFORMATION AND COUNSELLING

- Provide individual or group counselling with an expert (e.g., a personal trainer or health promotion facilitator).
- Share Internet-based tools and resources.
- Display print media (e.g, posters or handouts).

3) ORGANIZATIONAL CULTURE AND NORMS

- Create an office environment that supports active breaks (e.g., employee stair walking or walking meetings).
- Encourage active and frequent breaks from sitting (e.g., hourly prompts to stand up, stretch or walk).

4) ACCESS AND THE PHYSICAL ENVIRONMENT

- Rearrange the workplace layout (e.g., move printers farther away from workstations).
- Modify workstations (e.g., sit-to-stand desks and treadmill, cycling or stepping workstations).
- Provide access to an exercise facility.
- Provide secure bike racks.

A series of four documents, each targeting a type of intervention, were developed to provide more detailed information pertaining to the implications of the findings from the systematic review.



PRIMARY OUTCOMES

Physical activity and sedentary behaviour were the two primary outcomes of the systematic review.

1. PHYSICAL ACTIVITY

The most effective workplace physical activity interventions targeted changes to **organizational culture and norms**. Significant findings were found in 80% of studies examined in this intervention category. Successful interventions were implemented through workplace physical activity policies.

Examples include:

- Providing flexible work hours for employees (e.g., starting work earlier or later to support participation in physical activity).
- Promoting and encouraging incidental workplace physical activity, such as standing meetings, active breaks instead of coffee breaks, walking lunch groups, or standing desk stretches.
- Reinforcing organization level commitment to establishing a healthy workplace for employees (e.g., safe bike storage, appealing stairwells, or lunch time walking groups).

Effectiveness and quality of studies were assessed using rigorous systematic review protocols.⁸

Effectiveness and Quality of Physical Activity Interventions		
Intervention Category	Effectiveness of Intervention (% of the studies that showed an increase in physical activity)	Quality of Studies
Challenges and Competitions	59% (10/17 studies found significance)	★★☆ (Mean: 0.59; Range: -3 to 7)*
Information and Counselling	54% (19/35 studies found significance)	★★☆ (Mean: 0.46; Range: -4 to 6)*
Organizational Culture and Norms	80% (4/5 studies found significance)	★★☆ (Mean: 0.80, Range: -4 to 6)*
Access and the Physical Environment	44% (4/9 studies found significance)	★★☆ (Mean: 0.44; Range: -4 to 6)*

*Quality of studies: scores and associated stars are based on the average risk of bias assessment for the studies. The risk of bias is considered high in studies that do not randomly assign participants to the intervention, do not blind participants and personnel to the intervention, have incomplete data, have selective reporting, or have other potential threats to the validity of the findings. Studies with a lower risk of bias are considered of higher quality. Studies conducted in a naturalistic setting, such as workplaces, generally have a higher degree of bias.

- ★☆☆ : Poor Quality Studies (scored -7 to 0);
- ★★☆ : Moderate Quality Studies (scored 1 to 4);
- ★★★ : High Quality Studies (scored 5 to 7).

2. SEDENTARY BEHAVIOUR

The most effective workplace sedentary behaviour interventions targeted changes in **access and the physical work environment**. In this intervention category, 86% of studies examined found significant results.

More specifically, sit-stand workstations were found to be the most effective adjustment to the physical work environment and were able to both significantly reduce daily minutes of sitting time and increase the number of sit-stand transitions.

Effectiveness and Quality of Sedentary Behaviour Interventions		
Intervention Category	Effectiveness of Intervention (% of the studies that showed an increase in physical activity)	Quality of Studies
Challenges and Competitions	60% (3/5 studies found significance)	★★☆ (Mean: 2.20; Range: 0 to 6)*
Information and Counselling	50% (5/10 studies found significance)	★★☆ (Mean: 2.30; Range: 0 to 6)*
Organizational Culture and Norms	67% (2/3 studies found significance)	★★☆ (Mean: 3.67; Range: 1 to 6)*
Access and the Physical Environment	86% (6/7 studies found significance)	★★☆ (Mean: 1.71; Range: -1 to 6)*

*Quality of studies: scores and associated stars are based on the average risk of bias assessment for the studies. The risk of bias is considered high in studies that do not randomly assign participants to the intervention, do not blind participants and personnel to the intervention, have incomplete data, have selective reporting, or have other potential threats to the validity of the findings. Studies with a lower risk of bias are considered of higher quality. Studies conducted in a naturalistic setting, such as workplaces, generally have a higher degree of bias.

- ★☆☆ : Poor Quality Studies (scored -7 to 0);
- ★★☆ : Moderate Quality Studies (scored 1 to 4);
- ★★★ : High Quality Studies (scored 5 to 7).

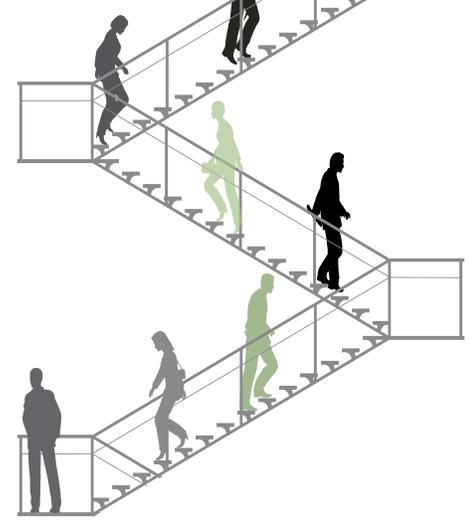
SECONDARY OUTCOMES

A variety of secondary outcomes were influenced as a result of workplace interventions aimed at increasing physical activity and reducing sedentary behaviour.

Interventions targeted at changing the workplace culture and norms increase employee involvement in workplace physical activity and enhance management support.

Additionally, interventions aimed at providing access to physical activity and changing the physical work environment were successful at:

- increasing employee life satisfaction,
- increasing positive mood states,
- increasing presenteeism,
- decreasing stress and depressive symptoms,
- lowering negative mood states, and
- reducing body fat.



SUMMARY

Given that employees spend the majority of their waking hours at the workplace, it is seen as the ideal location to implement interventions that increase health behaviours, such as increasing physical activity and reducing sedentary behaviour.

Before starting an intervention, workplaces should:

- conduct a workplace audit or needs assessment to explore employee interests,
- conduct an employee readiness for change assessment,
- identify potential barriers and actions to overcome them,
- audit the workplace environment for deterrents and supports, and
- identify the available financial, human and informational resources.

RECOMMENDATIONS

The research literature explores a variety of other workplace interventions to encourage employees to engage in healthy behaviours.

Such interventions include:

- walking challenges using pedometers and designated websites to track activity,
- hourly computer prompts reminding employees to stand up and move,
- motivational signs or posters to encourage stair climbing instead of elevator riding, and
- establishing workplace physical activity policies that encourage active group lunch breaks, such as organized sports or neighbourhood walks.

Sit-stand workstation interventions are one of the easiest, most successful and cost-effective interventions to implement. This simple change in the environment provides employees with a constant visual reminder to stand up and move. As such, sit-stand workstations actively promote more sit-stand transitions throughout the day and reduce prolonged bouts of sitting.

Regardless of the intervention method implemented, all workplace interventions should be multi-faceted. Clear and visual support from management for participation in positive health behaviours at the workplace is critical for successful implementation. Additionally, all interventions should be paired with an educational component to provide employees with the necessary skills and understanding of how to incorporate physical activity into their daily routine to combat prolonged sedentary behaviours.

Please review the four implementation summary documents for more detailed information: 1) Challenges and Competitions, 2) Information and Counselling, 3) Organizational Cultures and Norms, and 4) Access and the Physical Environment.

ACKNOWLEDGEMENTS

Project Team:

Nora Johnston, MA
Betty Lee, BPE
Christina Loitz, PhD
Nicole McLeod, MA
Jeremy Potter, BPE
Jessica Walker, MA

Advisory Committee:

Tye Babb, Edmonton Southside Primary Care Network
Katie Chapman, University of Calgary
Victoria Grainger, Covenant Health
Carmen Jensen, Grande Prairie Primary Care Network
Jackie Killick, Shell Canada
Dean Kozak, Government of Alberta
Megan Ragush, University of Alberta
Angela Torry, Alberta Health Services
Lindsay Wright, Be Fit For Life

REFERENCES

1. Bouchard C, Shephard RJ. Physical activity fitness and health: the model and key concepts. In: Bouchard C, Shephard RJ, Stephens T, editors. *Physical activity fitness and health: International proceedings and consensus statement*. Champaign (IL): Human Kinetics; 1994. 77-88.
2. Canadian Society for Exercise Physiology. Canadian Physical Activity Guidelines for Adults 18 to 64 Years. 2011. Retrieved from http://www.csep.ca/CMFiles/Guidelines/CSEP_PAGuidelines_adults_en.pdf
3. Colley RC, Garriguet D, Janssen I, Craig CL, Clarke J, Tremblay MS. Physical activity of Canadian adults: Accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. Statistics Canada, Catalogue no. 82-003-X Health Reports. 2011; 22(1).
4. Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. *Can Med Assoc J*. 2006; 174:801-809. doi:10.1503/cmaj.051351
5. Sedentary Behaviour Research Network. Standardized use of the terms “sedentary” and “sedentary behaviours”. *Appl Physiol Nutr Metab*. 2012; 37(3), 540-542. doi:10.1139/h2012-024
6. Biaswas A, Oh PI, Faulkner GE, Bajaj RR, Silver MA, Mitchell MS, Alter DA. Sedentary time and its association with risk for disease incidence, mortality, and hospitalization in adults: a systematic review and meta-analysis. *Ann Intern Med*. 2015; 162(2): 123-132. doi:10.7326/M14-1651
7. Matthews CE, Chen KY, Freedson PS, et al. Amount of time spent in sedentary behaviors in the United States, 2003-2004. *Am J Epidemiol*. 2008; 167(7): 875-81. doi:10.1093/aje/kwm390
8. Loitz C, Walker J, Potter R, Johnston N. Systematic review of workplace physical activity and sedentary behaviour interventions. PROSPERO 2015:CRD42015019398 Available from http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42015019398

ALBERTA CENTRE FOR
Active Living

2-131 University Hall, University of Alberta, Edmonton, Alberta, T6G 2H9
780.492.4863 | active.living@ualberta.ca | www.centre4activeliving.ca



@4ActiveLiving



Centre4ActiveLiving1

Alberta
Government

UNIVERSITY OF
ALBERTA





Increasing Physical Activity and Decreasing Sedentary Behaviour in the Workplace

Summary 1: Challenges and Competitions

September 2015

REPORTS IN THIS SERIES:

- Executive Summary
- Summary 1: Challenges and Competitions
- Summary 2: Information and Counselling
- Summary 3: Organizational Culture and Norms
- Summary 4: Access and the Physical Environment

ALBERTA CENTRE FOR
Active Living



CHALLENGES AND COMPETITIONS

The articles from the systematic review (refer to the Executive Summary) were summarized into four distinct, yet interrelated, groups based on common themes. The first of four summaries explores Challenges and Competitions.

Workplace challenges and competitions are fun and friendly initiatives that encourage employees to increase their participation in physical activity and/or reduce their sitting time.

Some examples include:

- Walking challenges
- Stair-climbing challenges
- Monitoring physical activity and sitting time using log books or websites.

Walking is a safe, low impact type of physical activity that can be easily adapted to meet individual needs (e.g., pace, distance, speed, terrain). Workplace walking challenges can monitor physical activity using pedometers to track the number of steps taken each day. Pedometers are an efficient tool for increasing awareness of current physical activity participation and being more mindful of opportunities to move more and sit less.

Effectiveness and Quality of the Workplace Challenges and Competition Studies		
Outcome	Effectiveness of Intervention	Quality of Studies
Increased Physical Activity	<p>59% of the studies reported an increase in physical activity (10/17 studies found significance)</p>	<p>★☆☆ (Mean: 0.59; Range: -3 to 7)*</p>
Decreased Sedentary Behaviour	<p>60% of the studies reported a decrease in sedentary behaviour (3/5 studies found significance)</p>	<p>★★★☆☆ (Mean: 2.20; Range: 0 to 6)*</p>

*Quality of studies: scores and associated stars are based on the average risk of bias assessment for the studies. The risk of bias is considered high in studies that do not randomly assign participants to the intervention, do not blind participants and personnel to the intervention, have incomplete data, have selective reporting, or have other potential threats to the validity of the findings. Studies with a lower risk of bias are considered of higher quality. Studies conducted in a naturalistic setting, such as workplaces, generally have a higher degree of bias.

- ★☆☆ : Poor Quality Studies (scored -7 to 0);
- ★★☆☆ : Moderate Quality Studies (scored 1 to 4);
- ★★★☆☆ : High Quality Studies (scored 5 to 7).

DESCRIPTION OF SUCCESSFUL CHALLENGES AND COMPETITIONS

Recommendations from the Literature

Type

Use a pedometer for challenges and competitions.

Modification: Consider phone applications (e.g., Moves) or physical activity monitors (e.g., Fitbit).



Frequency

Participation and self-monitoring should occur daily.



Challenge Length

Four-week challenges allow for enough time to make a positive change.

Modification: Challenges and competitions can be 1 to 12 weeks in length depending on the amount of engagement required from employees. The more engagement required, the shorter the intervention length.



Time

Engage in active breaks (e.g., climb 5 flights of stairs to move more or walk to a washroom on a different floor) or stand every hour to break up sitting time.

Add bouts of continuous walking at work breaks. A "bout" of physical activity is equal to 10 continuous minutes or more of activity.

Modification: Tailor the amount of time employees are being physically active to their experience and capability. Physical activity bouts can range from 10 to 60 minutes per day.



Activity Type

Accumulate both incidental and purposeful physical activity.

Incidental physical activity = unstructured physical activity which is part of your daily routine (e.g., walking from the bus stop, taking the stairs).

Purposeful physical activity = structured physical activity that is planned and includes repetitive body movements (e.g., going to the gym at lunch to exercise, taking a fitness class).



Evaluation

Monitor and log steps, physical activity or sedentary behaviour time in a log book or tracking website.

LOG YOUR NEW ACTIVITY					
LAST 7 DAYS JUNE 26 2015 - JULY 2 2015					
DATE	STEPS WALKED	MODERATE ACTIVITY (MINUTES)	VIGOROUS ACTIVITY (MINUTES)	DAILY STEP TOTALS	FLIGHTS
Today 07/02/2015	1003			1003	0
Yesterday 07/01/2015	1276		45	2152	16
Tuesday 06/30/2015	1507			1507	0
Monday 06/29/2015	648	45		1093	4
Sunday 06/28/2015	6872		30	12872	4
Saturday 06/27/2015	9208		8	9208	0
Friday 06/26/2015	1129	45		12029	0

TOOLS FOR IMPLEMENTING CHALLENGES AND COMPETITION

Workplace pedometer challenges and competitions should include other resources such as educational materials, email reminders, online support or websites.

PEDOMETER AND PHYSICAL ACTIVITY MONITORS

High Cost: [Fitbit Flex Wireless Activity Wristband](#) ~ \$100

Low Cost: [StepCount Piezo StepX Pedometer](#) ~ \$16 each or \$14 (for 2-10)

Free: [Moves App for iPhone](#) (downloadable through iTunes and Android on Google Play)

UWALK.CA

This [free online resource](#) allows individuals to track their physical activity in steps or minutes of moderate and vigorous physical activity, monitor progress and compete in individual or group challenges with friends, family or coworkers. UWALK has developed an implementation guide to help workplace champions set up a walking and/or physical activity challenge (see the Resources section of the website for the How-to/Implementation Guide).

ALBERTA CENTRE FOR ACTIVE LIVING

The Centre provides practitioners with education and resources focused on encouraging Albertans to lead a healthier lifestyle. The website includes resources, such as a [Pedometer Information Sheet](#) for adults, and ways to include people with mobility issues in physical activity challenges. [A Pedometer Kit is available for loan](#), free of charge.

GOALSETTING

Goalsetting is a powerful approach to behaviour change. Goals should be specific for individual needs, realistic, attainable and measurable. Examples of successful workplace walking challenge goals include:

- Individual-level goals: Gradually increase average daily steps by 1000 steps every 2-weeks.
- Interpersonal-level goals: Establish a route-based lunch time walking group with co-workers.
- Worksite-level goals: Display posters reporting progress in walking or stair climbing challenges.

EMAILS

Weekly emails are unobtrusive, cost-effective and reach a large number of employees. Emails can:

- Serve as a motivational tool.
- Provide reminders to move more and sit less.
- Support goalsetting and overcoming barriers.
- Educate employees about relevant and current health knowledge.

IMPLEMENTATION RECOMMENDATIONS

1. Obtain management support and commitment.
2. Elect a wellness champion to organize the workplace challenges and encourage employees to move more and sit less.
3. Take time to plan the workplace challenge and identify challenge characteristics such as:
 - a. Length: number of weeks.
 - b. Type of challenge: distance, time, or elimination based; charity fundraising event.
 - c. Type of participation: individual, team, or workplace level.
4. Help employees prepare for the challenge:
 - a. Identify quality pedometer brands and vendors that sell or lend pedometers.
 - b. Inform employees about how to accurately wear a pedometer.
 - c. Identify and share the health benefits of adding 2,000 steps to your daily routine.
 - d. Explain where and how to successfully track and log daily steps.
5. Generate excitement and interest in the challenge through promotional resources and incentives.
6. Monitor progress and encourage involvement.
7. Reflect and evaluate the process outcomes and impact.
8. Workplace wellness champions can encourage employees to:
 - a. Have walking meetings.
 - b. Hand-deliver messages.
 - c. Take their coffee for a “walk break”.
 - d. Enjoy the fresh air by going outside.
 - e. Engage in physical activity over the lunch hour.

By wearing a pedometer, employees have a constant reminder of their daily step count and physical activity participation.

Remember: Workplace culture will take more time to change than a single workplace challenge.



BACKGROUND

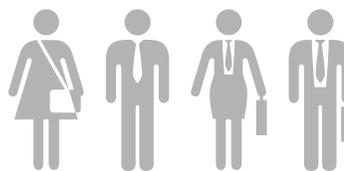
Characteristics of Studies Included in the Review

POPULATION

Healthy adults, 18 years of age or older, working in a full-time or part-time capacity:

Average # of participants = 128

Range in # of study participants = 14 to 664



INTERVENTIONS

Average duration = 11.5 weeks

Range in duration =
1 week to 6 months



COMPARISONS

Measured in a pre-test/
post-test format, with or
without a control group.



OUTCOMES

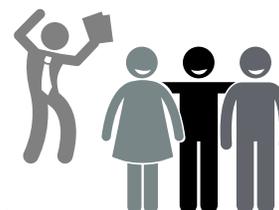
Primary Outcomes of Challenges and Competitions

- **For Physical Activity**, the greatest impact was observed in daily steps at the workplace.
- **For Sedentary Behaviour**, the greatest impact was found in reducing minutes of sitting time.



Secondary Outcomes of Challenges and Competitions

- Participants perceived themselves to be more physically active.
- Mental wellbeing improved among pedometer users.
- Employees' perception of management support increased.
- Workplace challenges and competitions increased employees' involvement.



The following studies with challenge and competition interventions were included in the systematic review:

Aittasalo, Rinne, Pasanen, Kukkonen-Harjula, & Vasankari (2012); Carr, Walaska, & Marcu (2013); Chan, Ryan, & Tudor-Locke (2004); Croteau (2004); De Cocker, De Bourdeaudhuij, & Cardon (2010); Delaney (2013); Dewa, de Rooter, Chau, & Karioja (2009); Dishman, DeJoy, Wilson, & Vandenberg (2009); Faghri, Omokaro Parker, Nichols, Gustavesen, & Blozie (2008); Gilson (2009); Gilson, Faulkner, Murphy, Meyer, Washington, Ryde, Arbour-Nicitopoulos, & Dillon (2013); Green, Cheadle, Pellegrini, & Harris (2007); Haines, Davis, Rancour, Robinson, Neel-Wilson, & Wagner (2007); Prestwich, Conner, Lawton, Ward, Ayres, & McEachan (2012); Richetti (2004); Samuels, Raedeke, Mahar, Karvinen, & DuBose (2011); Warren, Maley, Sugarwala, Wells, & Devine (2010); Webb (2013).

RESOURCES

Alberta Centre for Active Living	How to set up challenge to be inclusive of people with mobility issues: www.centre4activeliving.ca/news/2014/01/workplace-physical-activity-programs-all-focus-peo/ Pedometer Information Sheet: https://bit.ly/2x6TuOF Pedometer Kit Loans: www.centre4activeliving.ca/services/pedometer-kit-loans/
Cateye odometers	For wheelchair participants: www.cateye.com/en/products/category/1/
Fitbit Flex Wireless Activity Wristband	www.fitbit.com/en-ca/home
Moves	www.moves-app.com/
StepCount Piezo StepX Pedometer	http://stepscount.com/uwalk/shop-cart-view.php
UWALK	uwalk.ca/

ACKNOWLEDGEMENTS

Project Team:

Nora Johnston, MA
Betty Lee, BPE
Christina Loitz, PhD
Nicole McLeod, MA
Jeremy Potter, BPE
Jessica Walker, MA

Advisory Committee:

Tye Babb, Edmonton Southside Primary Care Network
Katie Chapman, University of Calgary
Victoria Grainger, Covenant Health
Carmen Jensen, Grande Prairie Primary Care Network
Jackie Killick, Shell Canada
Dean Kozak, Government of Alberta
Megan Ragush, University of Alberta
Angela Torry, Alberta Health Services
Lindsay Wright, Be Fit For Life

ALBERTA CENTRE FOR

Active Living

2-131 University Hall, University of Alberta, Edmonton, Alberta, T6G 2H9
780.492.4863 | active.living@ualberta.ca | www.centre4activeliving.ca





Increasing Physical Activity and Decreasing Sedentary Behaviour in the Workplace

Summary 2: Information and Counselling

September 2015

REPORTS IN THIS SERIES:

- Executive Summary
- Summary 1: Challenges and Competitions
- Summary 2: Information and Counselling
- Summary 3: Organizational Culture and Norms
- Summary 4: Access and the Physical Environment

ALBERTA CENTRE FOR
Active Living



INFORMATION AND COUNSELLING

The articles from the systematic review (refer to the Executive Summary) were summarized into four distinct, yet interrelated, groups based on common themes. The second of four summaries explores Information and Counselling.

It is important that workplaces support employees with knowledge and skills to comfortably begin and maintain positive health behaviours. In addition to physical activity and sedentary behaviour interventions, other methods of promoting health behaviour change within the workplace include interactive information, education and support. Some examples include:

- Providing in-person/online, individual or group counselling with an expert in the field, such as a personal trainer or health promotion facilitator.
- Providing Internet-based tools.
- Incorporating print media, such as posters and handouts that encourage healthy behaviours.

The most effective health promotion interventions are those with a multi-modal approach, such as pedometers and education, or sit-stand workstations and counselling.

Effectiveness and Quality of the Information and Counselling Studies		
Outcome	Effectiveness of Intervention	Quality of Studies
Increased Physical Activity	54% of the studies reported an increase in physical activity (19/35 studies found significance)	★☆☆ (Mean: 0.46; Range: -4 to 6)*
Decreased Sedentary Behaviour	50% of the studies reported a decrease in sedentary behaviour (5/10 studies found significance)	★★★☆☆ (Mean: 2.30; Range: 0 to 6)*

*Quality of studies: scores and associated stars are based on the average risk of bias assessment for the studies. The risk of bias is considered high in studies that do not randomly assign participants to the intervention, do not blind participants and personnel to the intervention, have incomplete data, have selective reporting, or have other potential threats to the validity of the findings. Studies with a lower risk of bias are considered of higher quality. Studies conducted in a naturalistic setting, such as workplaces, generally have a higher degree of bias..

- ★☆☆ : Poor Quality Studies (scored -7 to 0);
- ★★☆☆ : Moderate Quality Studies (scored 1 to 4);
- ★★★☆☆ : High Quality Studies (scored 5 to 7).

DESCRIPTION OF EFFECTIVE INFORMATION AND COUNSELLING

Recommendations from the Literature

AWARENESS INTERVENTIONS

Motivational Signs, Posters or Stair Stickers

Intervention

Strategically place motivational signs around the workplace to increase awareness and encourage employees to move more and sit less, such as:

- Placing posters in the elevator, by the elevator buttons or near the stairwell doors to encourage employees to take the stairs.
- Utilizing stair stickers to increase exposure to health promotion messages (see UWALK.ca for examples).



General Services Building, University of Alberta

Intervention Level

- Individual level: employees choose to participate or not.
- Population level: modifications are made to the environment or setting to encourage moving more and sitting less.

Appearance

Make the signs relevant and visually appealing, such as red stop signs, yellow yield signs or brightly coloured stair stickers.

Messages

Use a combination of health promotion and deterrent posters and banners, such as:

- Health promotion: "Walking up the stairs burns almost 5 TIMES more calories than riding the elevator." or "10 minutes of stair climbing a day protects your heart."
- Deterrent: "Please limit escalator use to those individuals unable to use the stairs." Or "Reduce your carbon footprint, take the stairs."

Organizational Support

Provide employees with proof that management supports healthy behaviours within the workplace, such as enhancing stairwells with artwork or music that encourage stair use.

Encourage workplace leaders to be role models by climbing the stairs regularly.

Summary

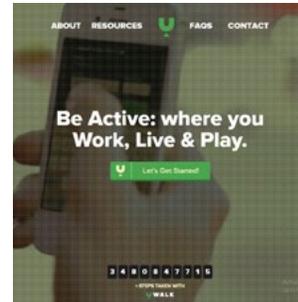
Benefit: Motivational signs, posters and stair stickers are cost-effective methods of increasing physical activity.

Challenge: Measuring the impact of motivational signs is difficult to assess, as data collection methods are often observational and individuals are not approached to explain why they choose the stairs or elevators.

LIFESTYLE CHANGE INTERVENTIONS

“E-ventions” (Websites and Emails)

The application of “e-ventions” (websites and emails) to educate and motivate physical activity participation and reduce sitting time at the workplace is a common strategy for targeting employees of a workplace.



Intervention Level

- Send employees weekly emails about the benefits and risks of being physically active.
- Provide tips on how to move more and sit less.
- Tailor messages to the individual and their workplace.
- Provide employees with links to websites with more information about being physically active and reducing sedentary behaviour, such as www.participaction.com or uwalk.ca.

Email Messages

Email content could include:

- Reminders to encourage participation and tracking of physical activity on a designated website.
- Notifications about relevant and thought-provoking educational sessions or documents.
- Encourage peer support and regular communication among employees within the workplace.
- Ideas on how employees can achieve their daily step goal or moderate-to-vigorous physical activity goals, such as:
 - o Park the car further away from their destination.
 - o Take a walk with a co-worker at lunch.
 - o Check the local newspaper for community events that support an active lifestyle.
- Discussions of potential obstacles that inhibit physical activity and how to overcome them.

Summary

Benefit:

- Emails are unobtrusive, cost-effective, immediately received, and able to reach a wide audience.

Challenge:

- Not everyone enjoys or values tracking physical activity. As such, adherence to a tracking website over long time periods may be low. Start with shorter interventions.
- “E-ventions” are not very effective for those who are less technologically savvy.
- Emails need to be inviting to all, as to encourage people of all physical activity levels to participate.

SUPPORTIVE INTERVENTIONS

Individual Counselling and Group Facilitation

Individual counselling and group facilitation can help employees:

- Incorporate physical activity into their daily routine to reduce the amount of time spent sitting.
- Set appropriate goals.
- Discuss potential barriers with an expert in an environment where people feel safe and comfortable.



Facilitator

- A health and wellness expert external to the workplace.

Modification: train a motivated individual within the workplace to be the workplace health champion.

Counselling Sessions

- For example, 1x per week for 30 minutes.
 - Either individual or group sessions, depending on the workplace environment and resources available.
-

Counselling Objectives

- Motivate employees to increase their daily physical activity and reduce sedentary behaviour through behaviour change strategies, such as goalsetting, self-monitoring, problem-solving, daily health tips, organized competitions, and facilitated group discussions.
 - Maintain open communication to continuously support and encourage employees.
 - Facilitate weekly physical activity and sedentary behaviour reflection.
 - Assist employees with setting new physical activity or sedentary behaviour goals based on their weekly reflection.
 - Follow-up with employees through emails or telephone calls when possible.
-

Summary

Benefit:

- Physical activity counselling has been shown to positively influence motivation and behaviour change towards daily physical activity.

Challenges:

- Positive behaviour change can decline once the counselling intervention stops.
- Counselling can be costly and time-consuming.

TOOLS FOR IMPLEMENTING INFORMATION AND COUNSELLING INTERVENTIONS

SUGGESTED FEATURES OF EFFECTIVE PHYSICAL ACTIVITY COUNSELLING STRATEGIES

The “Five A’s” of effective physical activity counselling (Goldstein, Whitlock, & DePue, 2004):

- 1) **Assess** individual physical activity levels and abilities, as well as beliefs and knowledge.
- 2) **Advise** individuals on potential health risks, the benefits of change, and the frequency and intensity of appropriate physical activity.
- 3) **Agree** on a plan of action, with specific goals based on the individual’s interest and confidence.
- 4) **Assist** in identifying personal barriers and strategies to overcome those barriers, potential opportunities to be active and with social support.
- 5) **Arrange** long-term follow-up visits, telephone calls, and email reminders to ensure behaviour change is sustained.

ALBERTA CENTRE FOR ACTIVE LIVING

This website provides evidence-based education and resources to start promoting physical activity in the workplace:

- [Physical Activity Counselling Toolkit](#): The toolkit includes handouts for practitioners, physical activity facilitators and exercise specialists to use when counselling individuals on starting and maintaining a physically active lifestyle.
- [Workplace Physical Activity Framework](#): This resource is an evidence-based audit tool that allows the workplace to evaluate their physical activity levels before, during, and after change has been implemented.

UWALK.CA

The UWALK.ca website provides multiple educational resources to encourage walking and stair climbing at the workplace, e.g., wall posters, stair stickers, how-to guides, videos, and PowerPoint presentations.

PHYSICAL ACTIVITY HOTLINE

[Physical Activity Services \(PAS\)](#):

This is a free physical activity counselling phone line where individuals can speak directly with a qualified exercise professional.

NATIONAL LEVEL PHYSICAL ACTIVITY EDUCATIONAL WEBSITES

- [Canadian Society for Exercise Physiology \(CSEP\)](#) is a voluntary organization composed of professionals interested and involved in the scientific study of exercise physiology, exercise biochemistry, fitness and health.
- [ParticipACTION](#) is the national voice of physical activity and sport participation in Canada.
- [Public Health Agency of Canada](#) is a national agency promoting the health of Canadians through the application of international research and development to Canada’s public health programs.
- [Health Canada](#) provides basic information and resources outlining the importance of daily physical activity, along with information on daily physical activity guidelines.

IMPLEMENTATION RECOMMENDATIONS

1. Obtain management support and commitment.
2. Outline the benefits of daily physical activity at work.
3. Determine what style of intervention is most suitable for your workplace (e.g., walking challenges, physical activity policy change, or sit-stand workstations).
4. Supplement the intervention with educational information or counselling.
5. Evaluate the effectiveness of the information being provided to employees and adjust where necessary to better educate employees on workplace physical activity and sedentary behaviour.



BACKGROUND

Characteristics of Studies Included in the Review

POPULATION

Healthy adults, 18 years of age or older, working in a full-time or part-time capacity:

Average # of participants = 180

Range in # of study participants = 14 to 1,566



INTERVENTIONS

Average duration = 12.5 weeks

Range in duration =
1 week to 9 months



COMPARISONS

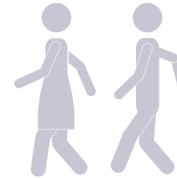
Measured in a pre-test/
post-test format, with or
without a control group.



OUTCOMES

Primary Outcomes

- **For Physical Activity**, significantly increased daily steps, daily flights of stairs, and daily minutes of physical activity.
- **For Sedentary Behaviour**, limited significant results were found for reducing daily minutes of sedentary behaviour.



Secondary Outcomes

- Employees perceived an increase in management support and fellow employee involvement.
- Life satisfaction, work productivity, work focus, social support, and positive mood states increased; while perceived stress, depressive symptoms, body fat, and negative mood states decreased.
- Presenteeism scores indicated that employees rated their job performance as higher.
- Receipt and utilization of educational materials was high for both education groups, and a majority of employees read educational emails.
- Employees perceived themselves to be more physically active.



The following studies with information and counselling interventions were included in the systematic review:

Aittasalo, Rinne, Pasanen, Kukkonen-Harjula, & Vasankari (2012); Borg, Merom, & Rissel (2010); Carr, Walaska, & Marcu (2013); Chan, Ryan, & Tudor-Locke (2004); Cook, Billings, Hersch, Back, & Hendrickson (2007); Croteau (2004); De Cocker, De Bourdeaudhuij, & Cardon (2010); Delaney (2013); Dishman, DeJoy, Wilson, & Vandenberg (2009); Edmunds, Stephenson, & Clow (2013); Evans, Fawole, Sheriff, Dall, Grant, & Ryan (2012); Faghri, Omokaro, Parker, Nichols, Gustavsen, & Blozie (2008); Flannery, Resnick, Galik, Lipscomb, Mcphaul, & Shaughnessy (2012); Gazmararian, Elon, Newsome, Schild, & Jacobson (2013); Gilson, Faulkner, Murphy, Meyer, Washington, Ryde, Arbour-Nicitopoulos, & Dillon (2013); Gordon (2013); Haines, Davis, Rancour, Robinson, Neel-Wilson, & Wagner (2007); Healy, Eakin, Lamontagne, Owen, Winkler, Wiesner, Gunning, Neuhaus, Lawler, Fjeldsoe, & Dunstan (2013); Irvine, Philips, Seeley, Wyant, Duncan, & Moore (2011); Meyer, Kayser, Kossovsky, Sigaud, Carballo, Keller, Martin, Farpour-Lambert, Pichard, & Mach (2010); Obiaka (2014); Opdenacker & Boen (2008); Plotnikoff, McCargar, Wilson, & Loucaides (2005); Plotnikoff, Brunet, Courneya, Spence, Birkett, Marcus, & Whitele (2007); Plotnikoff, Pickering, McCargar, Loucaides, & Hugo (2010); Prestwich, Conner, Lawton, Ward, Ayres, & McEachan (2012); Purath, Miller, McCabe, & Wilbur (2004); Smith (2010), Spittaels, De Bourdeaudhuij, Brug, & Vandelanotte (2007); Swartz, Rote, Welch, Maeda, Hart, Cho, & Strath (2014); Tucker, Lanningham-Foster, Murphy, Thompson, Weymiller, Lohse, & Levine (2011); van Berkel, Boot, Proper, Bongers, & van der Beek (2014); Van Hoecke, Delecluse, Opdenacker, Lipkens, Martien, & Boen (2012); Verweij, Proper, Weel, Hulshof, & van, Mechelen (2012); Warren, Maley, Sugarwala, Wells, & Devine (2010); Webb (2013); Weiters (2009); Yap (2008).

RESOURCES

Alberta Centre for Active Living	Physical Activity Counselling Toolkit: www.centre4activeliving.ca/our-work/physical-activity-counselling-toolkit/
	Workplace Physical Activity Framework: bit.ly/1dKDaXW
Canadian Society for Exercise Physiology	www.csep.ca/english/View.asp?x=460#
Five A's of Physical Activity Counselling	www.ncbi.nlm.nih.gov/pubmed/15275675
Health Canada	www.hc-sc.gc.ca/hl-vs/physactiv/index-eng.php
ParticipACTION	www.participaction.com
Physical Activity Services	www.healthlinkbc.ca/physical-activity/
Public Health Agency of Canada	www.phac-aspc.gc.ca/index-eng.php
UWALK.ca	Resources to Promote Workplace Physical Activity uwalk.ca/resources/

ACKNOWLEDGEMENTS

Project Team:

Nora Johnston, MA
Betty Lee, BPE
Christina Loitz, PhD
Nicole McLeod, MA
Jeremy Potter, BPE
Jessica Walker, MA

Advisory Committee:

Tye Babb, Edmonton Southside Primary Care Network
Katie Chapman, University of Calgary
Victoria Grainger, Covenant Health
Carmen Jensen, Grande Prairie Primary Care Network
Jackie Killick, Shell Canada
Dean Kozak, Government of Alberta
Megan Ragush, University of Alberta
Angela Torry, Alberta Health Services
Lindsay Wright, Be Fit For Life

ALBERTA CENTRE FOR

Active Living

2-131 University Hall, University of Alberta, Edmonton, Alberta, T6G 2H9
780.492.4863 | active.living@ualberta.ca | www.centre4activeliving.ca





Increasing Physical Activity and Decreasing Sedentary Behaviour in the Workplace

Summary 3: Organizational Culture and Norms

September 2015

REPORTS IN THIS SERIES:

- Executive Summary
- Summary 1: Challenges and Competitions
- Summary 2: Information and Counselling
- Summary 3: Organizational Culture and Norms
- Summary 4: Access and the Physical Environment

ALBERTA CENTRE FOR
Active Living



ORGANIZATIONAL CULTURE AND NORMS

The articles from the systematic review (refer to the Executive Summary) were summarized into four distinct, yet interrelated, groups based on common themes. The third of four summaries explores Organizational Culture and Norms.

Employees spend the majority of their day at work. Therefore, it is extremely important that workplaces create an office environment that supports increasing physical activity and reducing sedentary behaviour. Some examples include:

- Walking breaks instead of coffee breaks.
- Hourly computer prompts reminding employees to stand up and move.
- Formalizing workplace physical activity and sedentary behaviour policies.
- Establishing a lunch time walking group with coworkers.

Consciously adapting and challenging the traditional workplace culture and norm to be one that focuses on participation in daily physical activity and disruption of long bouts of sitting time supports healthier employees, enhances morale, and improves workplace productivity.

Periodic physically active work breaks have been shown to reduce employee physical discomfort and health risks associated with prolonged sitting.

Effectiveness and Quality of the Organizational Culture and Norm Studies		
Outcome	Effectiveness of Intervention	Quality of Studies
Increased Physical Activity	80% of the studies reported an increase in physical activity (4/5 studies found significance)	★☆☆ (Mean: 0.80; Range: -4 to 6)*
Decreased Sedentary Behaviour	67% of the studies reported a decrease in sedentary behaviour (2/3 studies found significance)	★★★☆☆ (Mean: 3.67; Range: 1 to 6)*

*Quality of studies: scores and associated stars are based on the average risk of bias assessment for the studies. The risk of bias is considered high in studies that do not randomly assign participants to the intervention, do not blind participants and personnel to the intervention, have incomplete data, have selective reporting, or have other potential threats to the validity of the findings. Studies with a lower risk of bias are considered of higher quality. Studies conducted in a naturalistic setting, such as workplaces, generally have a higher degree of bias.

- ★☆☆ : Poor Quality Studies (scored -7 to 0);
- ★★☆☆ : Moderate Quality Studies (scored 1 to 4);
- ★★★☆☆ : High Quality Studies (scored 5 to 7).

DESCRIPTION OF ORGANIZATIONAL CULTURE AND NORMS

Recommendations from the Literature

Changing the workplace culture and norm to include daily physical activity is a **smart business move!** Health-specific workplace policies can lay the groundwork to improve the workplace environment.

Assess

- 1) Conduct a **workplace physical activity assessment** to evaluate employee interests, employee level of readiness, potential barriers, workplace environment, and available resources.

Prepare

- 2) **Research and model** existing workplace physical activity policies.
- 3) Develop **Workplace Physical Activity Policies**, such as:
 - Provide flexible work hours for employees (e.g., coming into work earlier or later to foster engaging in physical activity).
 - Introduce corporate policies that combat prolonged sitting (e.g., standing meetings, active breaks instead of coffee breaks, walking lunch groups, standing desk stretches).
- 4) **Promote and educate** employees about the new physical activity policy and the benefits of cultivating a workplace that supports employee wellness. This will enhance awareness and understanding. Ideas include:
 - Host a **short seminar** educating employees and management about the benefits of physical activity at work.
 - Place educational **physical activity infographics** in workplace common areas.

Implement

- 5) **Implement policies** when:
 - Potential barriers have been addressed.
 - Goals are clearly stated.
 - Implementation timeframes are outlined.
 - There is buy-in from individuals influenced by the new policies.
- 6) **Evaluate the policy** to monitor its effectiveness.

Evaluate and Reinforce

- 7) **Review the policy** annually and adapt it to the changing organizational needs.
- 8) **Reinforce** the policy by showing employees organizational level commitment towards positive health changes within the workplace. Make physical activity an easy choice at work. Such activities include:
 - Offer secure bicycle storage and showers for employees who actively commute.
 - Make stairwells more appealing with paint, artwork and motivational signage.
 - Map out various walk/bike routes around the workplace and organize lunchtime walking, running, bicycling, or yoga groups.
 - Make standing or pacing (versus sitting) at long meetings an acceptable option.
 - Encourage workers to be active at their workstations by stretching or standing while on the phone.

Remember: Changing the workplace culture and norm to innately support daily physical activity will require time, patience and continuous effort from all individuals within the workplace.

TOOLS FOR IMPLEMENTING ORGANIZATIONAL CULTURE AND NORMS INTERVENTIONS

IMPLEMENTATION AND POLICY DEVELOPMENT GUIDES

- 1) [Investing in Physical Activity Through the Workplace: A Toolkit for Policy Development](#): This toolkit outlines how to establish and cultivate a workplace that supports physically active employees through development, implementation and promotion of a physical activity policy.
- 2) [Alberta Centre for Active Living - Physical Activity@Work](#): This user-friendly website helps employers, employees, workplace wellness coordinators and human resources advisors encourage physical activity in the workplace.
- 3) [Step By Step: A Workplace Walking Resource](#): This toolkit was designed to assist organizations in the implementation of walking programs.
- 4) [Feet First Guide to Walking Meetings](#): This online resource educates individuals about the benefits of walking meetings and how to implement them.
- 5) [Promoting Physical Activity at Work: A Toolkit for Workplaces](#): This collection of information, resources, activities and tools from a variety of organizations can help get employees active while at work.

ACTIVE BREAKS

Computer Prompt Software: Computer software prompting people to stand up and move around hourly can be installed on each employee's computer as a reminder to disrupt sitting time.

- [TimeLeft Software](#): a free downloadable and customizable computer application that counts down and provides a pop-up reminder message for scheduled employee work breaks.
 - **Activity Frequency:** 5 minutes of active behaviour every hour.
 - **Recommendation:** Computer prompts should provide employees with a physical activity suggestion, such as "Stand up and take 100 steps" or "Complete a series of standing stretches".

Videos: Online videos are an inexpensive resource that demonstrate quick and easy forms of physical activity that employees can follow at their convenience in their work space. Here are some useful workplace videos:

- [Yoga at Your Desk](#)
- [Stretching at Your Desk](#)
- [Standing Stretches](#)
- [Exercising Your Hands and Wrists](#)

Standing Meeting Table: Purchase an inexpensive table from IKEA with adjustable legs and set it to an appropriate height for standing meetings.

UWALK.ca: This free online resource allows individuals to track their physical activity, monitor their progress and compete in individual or group challenges with friends, family or coworkers.

PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR EDUCATION

These educational documents can be printed and placed in common areas for all to access:

- [8-Office Stretches](#): These slides provide detailed instructions on simple stretches that can be completed at a workplace.
- [Canadian Physical Activity and Sedentary Behaviour Guidelines](#): These single-paged guidelines provide recommendations on the amount and type of physical activity needed to experience positive changes to our health.
- [Bottom-Line Benefits of Physical Activity at Work](#): This webpage outlines detailed information about the health and workplace benefits associated with physical activity at work.

BACKGROUND

Characteristics of Studies Included in the Review

POPULATION

Healthy adults, 18 years of age or older, working in a full-time or part-time capacity:

Average # of participants = 201

Range in # of study participants: 14 to 664



INTERVENTIONS

Average duration = 11.7 weeks

Range in duration = 1 week to 9 months



COMPARISONS

Measured in a pre-test/post-test format, with or without a control group.



OUTCOMES

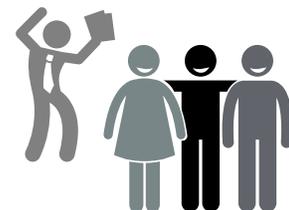
Primary Outcomes

- **For Physical Activity**, the greatest impact was observed in daily steps and daily MET¹ minutes of physical activity.
- **For Sedentary Behaviour**, the time employees spent in prolonged (30 minutes) uninterrupted sitting periods was most impacted when education was provided in conjunction with changes to cultures and norms.



Secondary Outcomes

- Positive influences on management support and employee involvement were observed.
- A reduction in levels of depression among employees was reported.



The following studies with organizational culture and norms interventions were included in the systematic review:

Dishman, DeJoy, Wilson, & Vandenberg (2009); Evans, Fawole, Sheriff, Dall, Grant, & Ryan (2012); Flannery, Resnick, Galik, Lipscomb, Mcphaul, & Shaughnessy (2012); Gazmararian, Elon, Newsome, Schild, & Jacobson (2013); Gilson, Puig-Ribera, McKenna, Brown, Burton, & Cooke (2009); Swartz, Rote, Welch, Maeda, Hart, Cho, & Strath (2014).

¹MET = Metabolic Equivalent of Task, or simply metabolic equivalent

RESOURCES

8-Office Stretches	www.mayoclinic.org/healthy-lifestyle/adult-health/multimedia/stretching/sls-20076525
Alberta Centre for Active Living - Workplace Portal	www.ualberta.ca/~active/workplace/
Bottom-Line Benefits of Physical Activity @ Work	www.ualberta.ca/~active/workplace/beforestart/benefits-bottom-line.html
Canadian Physical Activity and Sedentary Behaviour Guidelines	www.csep.ca/english/view.asp?x=804
Exercising Your Hands and Wrists (Video)	www.youtube.com/watch?v=MNtHfPDxB20
Feet First Guide to Walking Meetings	www.feetfirst.org/walk-and-maps/walking-meeting
Investing in Physical Activity Through the workplace: A Toolkit for Policy Development	http://bit.ly/1H9t40p
Promoting Physical Activity at Work: A Toolkit for Workplaces	http://bit.ly/1Fx3qeE
Standing Meeting Table	www.ikea.com/ca/en/
Standing Stretches (Video)	www.mayoclinic.org/healthy-living/adult-health/multimedia/lower-back-stretches/vid-20084701
Step By Step: A Workplace Walking Resource	www.bcrpa.bc.ca/media/61496/step-by-step-resources.pdf
Stretching at Your Desk (Video)	www.youtube.com/watch?v=F2EzRJayAYE
TimeLeft Software	www.nestersoft.com/timeleft/
UWALK.ca	uwalk.ca/
Yoga at Your Desk (Video)	www.youtube.com/watch?v=tAUf7aajBWE

ACKNOWLEDGEMENTS

Project Team:

Nora Johnston, MA
Betty Lee, BPE
Christina Loitz, PhD
Nicole McLeod, MA
Jeremy Potter, BPE
Jessica Walker, MA

Advisory Committee:

Tye Babb, Edmonton Southside Primary Care Network
Katie Chapman, University of Calgary
Victoria Grainger, Covenant Health
Carmen Jensen, Grande Prairie Primary Care Network
Jackie Killick, Shell Canada
Dean Kozak, Government of Alberta
Megan Ragush, University of Alberta
Angela Torry, Alberta Health Services
Lindsay Wright, Be Fit For Life

ALBERTA CENTRE FOR

Active Living

2-131 University Hall, University of Alberta, Edmonton, Alberta, T6G 2H9
780.492.4863 | active.living@ualberta.ca | www.centre4activeliving.ca





Increasing Physical Activity and Decreasing Sedentary Behaviour in the Workplace

Summary 4: Access and the Physical Environment

September 2015

REPORTS IN THIS SERIES:

- Executive Summary
- Summary 1: Challenges and Competitions
- Summary 2: Information and Counselling
- Summary 3: Organizational Culture and Norms
- Summary 4: Access and the Physical Environment

ALBERTA CENTRE FOR
Active Living



ACCESS AND THE PHYSICAL ENVIRONMENT

The articles from the systematic review (refer to the Executive Summary) were summarized into four distinct, yet interrelated, groups based on common themes. The fourth of four summaries explores Access and the Physical Environment.

On average, Albertans sit 9 hours per day. Small changes to the physical workplace environment can provide employees with more opportunities to engage in both purposeful and incidental physical activity. Some examples include:

- Changing the workplace layout, such as moving printers farther away from desks.
- Updating employee workstations to styles that encourage daily movement, such as sit-stand desks, treadmill workstations, cycling desks and stepping workstations.
- Improving access to physical activity while at work, such as installing or providing access to an exercise facility, change rooms with showers or adding secure bike racks.

Sit-stand workstations easily allow employees to alternate between sitting and standing postures at their desk. They have been shown to be the most effective change to the workplace environment in reducing daily minutes of sedentary behaviour, as well as interrupting prolonged bouts of sitting with more sit-to-stand transitions.

Effectiveness and Quality of Access and the Physical Environment		
Outcome	Effectiveness of Intervention	Quality of Studies
Increased Physical Activity	<p>44% of the studies reported an increase in physical activity (4/9 studies found significance)</p>	<p>★☆☆ (Mean: 0.44; Range: -4 to 6)*</p>
Decreased Sedentary Behaviour	<p>86% of the studies reported a decrease in sedentary behaviour (6/7 studies found significance)</p>	<p>★★★☆☆ (Mean: 1.71; Range: 1 to 6)*</p>

*Quality of studies: scores and associated stars are based on the average risk of bias assessment for the studies. The risk of bias is considered high in studies that do not randomly assign participants to the intervention, do not blind participants and personnel to the intervention, have incomplete data, have selective reporting, or have other potential threats to the validity of the findings. Studies with a lower risk of bias are considered of higher quality. Studies conducted in a naturalistic setting, such as workplaces, generally have a higher degree of bias.

- ★☆☆ : Poor Quality Studies (scored -7 to 0);
- ★★☆☆ : Moderate Quality Studies (scored 1 to 4);
- ★★★☆☆ : High Quality Studies (scored 5 to 7).

DESCRIPTION OF ACCESS AND THE PHYSICAL ENVIRONMENT

Effective Recommendations from the Literature

INSTALL SIT-STAND WORKSTATIONS

Length

Four weeks to allow for behaviour change to be implemented, tested, and accepted.

Modification: 8 weeks or longer.



Activity Duration

Transitions to standing should be made after 20 minutes of continuous sitting.

Employees may stand for as long as they feel comfortable and maintain good posture.



Frequency

Employees should use their sit-stand workstation 5 days per week.

Modification: 3-7 days per week depending on part-time/full-time employee or shift-work schedule.



Benefits

- Sit-stand workstations are easy to use, enjoyable and comfortable.
- After installation, no additional support is necessary and employees will naturally decrease their sitting time.

Challenges

- The initial purchasing cost can be expensive and require careful planning and consideration.
- Standing while at work may not be possible for those with existing physical pain, injuries or mobility constraints.

ADD SELF-MONITORING DEVICES AND EDUCATION

Interventions providing access to physical activity or changing the physical work environment should be accompanied with daily physical activity self-monitoring devices and education.

- **Pedometer, Logging App or Physical Activity Monitor:** Allows individuals to obtain feedback and self-monitor their daily physical activity and sitting time.
- **Education:** Employees should receive a brief training session on how to use their sit-stand workstation, including how to adjust the workstation to an ergonomically correct height and the associated health benefits of standing while at work.



TOOLS FOR IMPLEMENTING ACCESS AND THE PHYSICAL ENVIRONMENT INTERVENTIONS

SIT-STAND WORKSTATIONS

High Cost: [Ergotron® 24-216-085 WorkFit-C Single LD Sit-Stand Workstation](#) ~ \$1310

Medium Cost: [WorkFit-S, Dual Sit-Stand Workstation](#) ~ \$550

Low Cost/Do It Yourself: [IKEA side table placed on top of an existing desk. \(LACK collection side table\)](#) ~ \$13

Padded Floor Mats: The mat aids in reducing foot soreness from standing for extended periods of time. ([Genuine Joe Air Step Anti-Fatigue Mat](#)) ~ \$25

PEDAL WORKSTATIONS

For those who are unable to stand for extended periods of time, a portable pedal machine ([Stamina 15-0120 InStride Cycle XL](#) ~ \$60 U.S.) provides employees with an alternative method to engage in “active sitting” as a form of reducing sedentary behaviour at work.



PEDOMETERS AND ACTIVITY MONITORS

Pedometers or activity monitors help employees to be mindful of their daily physical activity levels and serve as a motivational tool to increase workplace physical activity. For more information on recommended pedometers or activity monitor brands and prices, please refer to the Challenges and Competitions summary document.

DESKTOP AND DEVICE APPS

Numerous apps are available that remind employees when to sit and stand throughout the workday, such as [StandApp](#) and [StretchClock Break Reminder](#).

EDUCATION

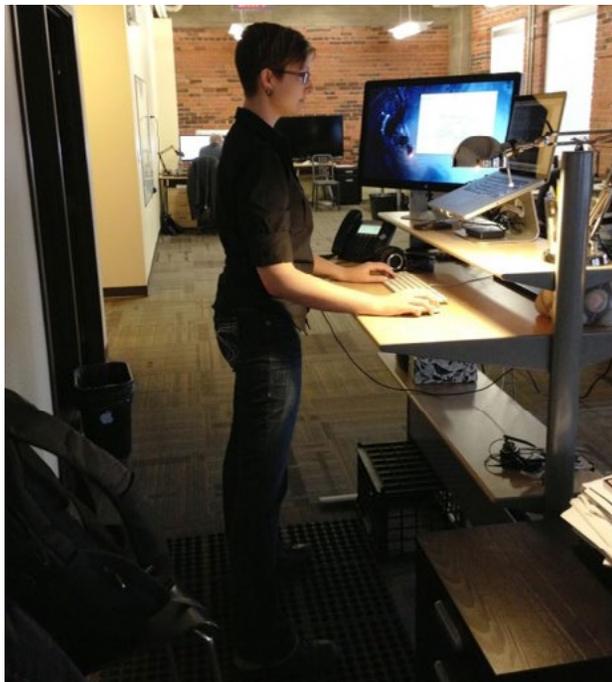
[Workplace Ergonomic Planner:](#) This tool uses individual measurements to aid employees in setting up an ergonomically correct sit-stand workstation.

[Standing at Work:](#) The Canadian Centre for Occupational Health and Safety provides detailed information about standing at work, the health risks associated with prolonged sitting, and how to accurately stand at work.

IMPLEMENTATION RECOMMENDATIONS

- 1.** Obtain management support and commitment to changing the physical work environment (e.g., the intervention occurring during paid work time).
- 2.** Introduce the idea of sit-stand workstations to employees and conduct a workplace needs assessment. Possibly purchase one desk that can be used as a standing station.
- 3.** Obtain employee buy-in towards the intervention and changes to the workplace environment.
- 4.** Provide education about the new workstations and its associated benefits.
- 5.** Develop collaborative workplace or department and individual physical activity or sedentary behaviour goals and objectives.
- 6.** Establish an action plan and budget.
- 7.** Research and purchase the appropriate sit-stand workstations for the office.
- 8.** Install sit-stand workstations in an obstacle-free space.
- 9.** Provide continued support and encouragement.
- 10.** Evaluate the sit-stand workstation implementation and make improvements.

Remember: Organizational change will take longer than the four-week intervention time frame for it to become institutionalized and part of the workplace culture.



BACKGROUND

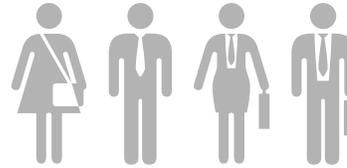
Characteristics of Studies Included in the Review

POPULATION

Healthy adults, 18 years of age or older, working in a full-time or part-time capacity:

Average # of participants = 31

Range in # of study participants = 11 to 410



INTERVENTIONS

Average duration = 16.7 weeks

Range in duration =
2 weeks to 1 year



COMPARISONS

Measured in a pre-test/
post-test format, with or
without a control group.



OUTCOMES

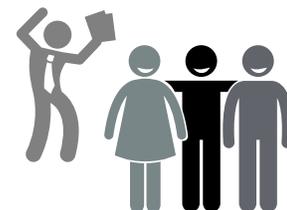
Primary Outcomes

- For **Physical Activity**, the number of sit-stand transitions increased.
- For **Sedentary Behaviour**, daily minutes of sitting time were significantly reduced.



Secondary Outcomes

- An increase in life satisfaction, positive mood states, and presenteeism at work among employees.
- Decreases in stress, depressive symptoms, negative mood states, and body fat were reported.
- The reception and utilization of educational materials was high.



The following studies with access and the physical environment interventions were included in the systematic review:

Alkhajah, Reeves, Eakin, Winkler, Owen, & Healy (2012); Carr, Walaska, & Marcu (2013); Chau, Daley, Dunn, Srinivasan, Do, Bauman, & van der Ploeg (2014); Edmunds, Stephenson, & Clow (2013); Flannery, Resnick, Galik, Lipscomb, Mcphaul, & Shaughnessy (2012); Gazmararian, Elon, Newsome, Schild, & Jacobson (2013); Gilson, Suppini, Ryde, Brown, & Brown (2012); Grunseit, Yuk-Yin Chau, van der Ploeg, & Bauman (2013); Healy, Eakin, Lamontagne, Owen, Winkler, Wiesner, Gunning, Neuhaus, Lawler, Fjeldsoe, & Dunstan (2013); Koepp, Manohar, McCrady-Spitzer, Ben-Ner, Hamann, Runge, & Levine (2013); Tucker, Lanningham-Foster, Murphy, Thompson, Weymiller, Lohse, & Levine (2011).

RESOURCES

Ergotron® 24-216-085
WorkFit-C Single LD Sit-Stand
Workstation

<http://bit.ly/1Cz1h22>

IKEA LACK side Table

www.ikea.com/ca/en/catalog/products/40104270/

Padded Anti-fatigue Floor
Mats

www.bestbuy.ca/en-CA/product/genuine-joe-genuine-joe-air-step-anti-fatigue-mat-36-x-24-gjo53231-black-gjo53231/10303179.aspx

Stamina 15-0120 InStride
Cycle XL

staminaproducts.com/?s=instride+cycle

StandApp

standapp.biz/. (Also it is free to download from App Store)

Standing at Work: The
Canadian Centre for
Occupational Health and
Safety

www.mayoclinic.org/healthy-lifestyle/adult-health/multimedia/stretching/sls-20076525

StretchClock App

www.stretchclock.com/download/

WorkFit-S, Dual Sit-Stand
Workstation

<http://bit.ly/1HlhD3K>

Workplace Ergonomic Planner

www.ergotron.com/tabid/305/default.aspx



Example of a secure bike lockup.

ACKNOWLEDGEMENTS

Project Team:

Nora Johnston, MA
Betty Lee, BPE
Christina Loitz, PhD
Nicole McLeod, MA
Jeremy Potter, BPE
Jessica Walker, MA

Advisory Committee:

Tye Babb, Edmonton Southside Primary Care Network
Katie Chapman, University of Calgary
Victoria Grainger, Covenant Health
Carmen Jensen, Grande Prairie Primary Care Network
Jackie Killick, Shell Canada
Dean Kozak, Government of Alberta
Megan Ragush, University of Alberta
Angela Torry, Alberta Health Services
Lindsay Wright, Be Fit For Life

ALBERTA CENTRE FOR
Active Living

2-131 University Hall, University of Alberta, Edmonton, Alberta, T6G 2H9
780.492.4863 | active.living@ualberta.ca | www.centre4activeliving.ca

