Movement Motivation: The Case for Promoting Movement in Office Workers at CSU Campuses

Kellie Marshall, CSU Stanislaus
Jill Millican, CSU East Bay
Adell Seibles, CSU Sacramento
Thomas Sneed, CSU East Bay

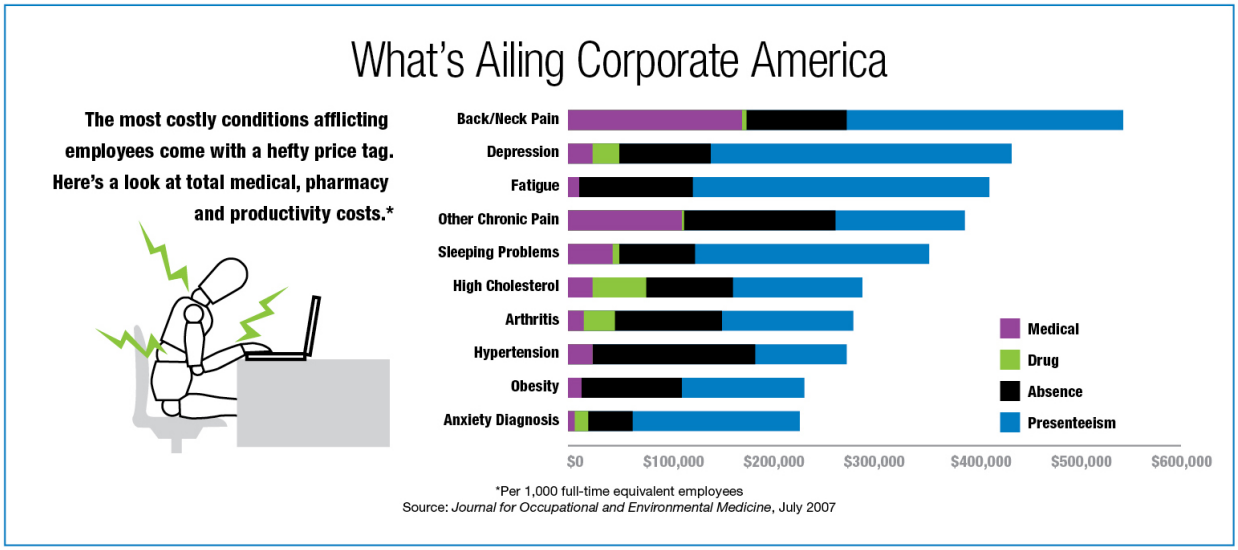
INTRODUCTION

For decades sitting at a desk has been the norm. But thanks to science and research we now know that sedentary behavior causes a host of health and wellness problems – from poor circulation to premature spinal disc degeneration – and is detrimental to our long term well-being. An estimated 70% of the U.S. workforce sits in offices each day and the average American spends around 95% of the workday seated.

Is sitting the problem and standing the solution? Short answer: NO! Prolonged standing is linked to foot pain, varicose veins and static muscle fatigue. It causes joints in the hips and knees to become temporarily immobilized in turn causing damage to tendons and ligaments. People who have sedentary jobs, even those who exercise for an hour or more several times per week, still have a higher risk for developing these illnesses or even dying prematurely.(1) Movement is the key! We need movement, and more of it. Researchers recommend factoring more breaks into the workday and striking a balance between seated and standing positions.(2, 3) Standing for 10-15 minutes every hour boosts circulation, takes pressure off the spine, and balances muscle use. Rebooting the body and mind regularly also enhances productivity and reduces fatigue.

"Today, our bodies are breaking down from obesity, high blood pressure, diabetes, cancer, depression, and the cascade of health ills and everyday malaise that come from what scientists such as myself have named sitting disease."
~ James A. Levine, MD, PhD. *Move a Little, Lose A Lot*, 2009

Fig. 1



This paper will detail the problems with sedentary work habits and its associated costs. It will also outline multiple solutions that can be incorporated to improve our employees' situations, thus lessening the risks, improving attitudes and productivity, and positively affecting the aforementioned costs.

PROBLEM

We have grown to realize that office workers, bolstered by recent research, sit for too long throughout the day. Add to that long commute times, sitting at meals, and engaging in sedentary activities at home, it becomes easy to see how cultural and lifestyle choices can be a negative force on our health status. Research shows that the average American spends an estimated 80% of time sitting while on a computer, on a portable device, watching TV, eating and/or commuting to work, etc.

Fig. 2



As pointed out in the introduction the risk of chronic diseases increases greatly for those who have these sedentary lifestyle habits. By some estimates, over 50% of the US population will become obese or diabetic by 2020. The economic costs associated with sedentary habits both to workers and their employers can be staggering.

Many times, efforts to promote more movement throughout the day and decrease sedentary habits have largely been lacking or ineffective. A survey was taken in 2013 of the various California State University Campuses about whether there was a program in place to teach stretching for employees. The majority of campuses had no formalized stretching, exercise, or movement program in place for employees.

This has likely changed to some extent since then, but we could all probably strive to do more. Even when classes or software is made available, participation and retention rates tend to be marginal at best.(4, 5) When it comes to software solutions, some find that they are too busy when prompted or it pops up at an inconvenient time and they bypass the session. For classes, convenience, flexible time to participate during the work day, and waning interest can all impact participation and retention. We also used to have a false sense of security when it came to exercising regularly. It used to be thought that regular exercise was a buffer against the consequences of working at a desk job. While people who exercise regularly tend to be more fit and healthy than those that do none, exercising outside of the work day does not mitigate or prevent the effects of sedentary work.(1, 6)

The costs associated with sedentary habits in healthcare dollars, absenteeism, presenteeism, and decreased productivity add up to thousands of dollars for individual employees and tens of billions of dollars for all workers in the United States every year. Also, a RAND study from 1989 determined that the lifetime subsidy from others to those with a sedentary life style is $1900.00.(7) Studies performed from 2005-2007 that looked at data from the populations of Maine, California, and other states showed that the costs for medical care, workers' compensation, and lost productivity, were the higher for those who were inactive when compared to obesity and being overweight.(8, 9) In the table below, which reflects data from California workers, losses from physical inactivity were roughly 40% higher than losses from obesity and overweight combined. One thing that is apparent from these studies and others like them is that the costs incurred as a result of both lifestyle, workplace culture, and workplace environment affect

us all in tangible economic ways. Whether we individually make healthy choices in the workplace or not, the actions of our colleagues also affect us. It follows that this effect is also translated to the organizations that we work for.

Fig. 3
Direct, Indirect, and Total Costs for Physical Inactivity, Obesity, and Overweight in California Adults (in Year 2000 Dollars).

	Medical Care Cost		*Workers' Compensation Cost*	*Lost Productivity Cost*		*Total Cost*
	Treatment	Cost of Prescription Drugs		Absenteeism, Presenteeism, and Short-term	On-the-job Injury	
Physical Inactivity						
Direct	$241,985,581	$1,065,943,038	$50,005,040	$7,528,629,764	$274,983,844	$9,161,574,267
Indirect	$725,956,744	$3,197,829,114	$200,020,159	0	0	$4,123,806,017
					Total Physical Inactivity Cost	**$13,285,353,284**
Obesity						
Direct	$135,520,641	$595,514,095	$17,658,344	$3,364,013,159	0	$4,112,706,239
Indirect	$406,561,922	$1,786,542,286	$70,633,376	0	0	$2,263,737,584
					Total Obesity Cost	**$6,376,443,823**
Overweight						
Direct	$93,509,242	$410,605,609	0	0	0	$504,114,851
Indirect	$280,527,726	$1,231,816,827	0	0	0	$1,512,344,553
					Total Overweight Cost	**$2,016,459,404**
			Total Cost of Physical Inactivity, Obesity, and			**$21,678,256,511**

SOLUTION

Generally speaking we need to stand more and we need to move more. Not one or the other, but both. How much we should stand and move is up for scholarly debate, but recent consensus in the UK is for office workers to move for about 2 hours out of an 8 hour work day.(2) Canadian physician, Dr. David Alter, recommends cutting sitting time by 2-3 hours for those sitting at least 12 hours per day.(10) It seems like a lot, that it may interfere with an employee's work day and reduce their productivity. However, if we think about it and take a multicomponent approach to the problem, the guidelines outlined above are approachable.

Strategies for increasing movement.
First off, it is obvious that the goal of 2 hours of movement per work day should be divided into smaller segments throughout the day. There is also no evidence that suggests that one approach or time frame has any advantage over another. There may be some workers where it's feasible to be out of their chair moving to some degree for 15 minutes for every hour worked, adding up to 2 hours. For most workers, that is probably not the case. Depending on the duties being performed, there may be 5 minutes one hour and 30 minutes another. Also, some aspects of an employee's work might be more conducive to standing, such as talking on the phone, for example. Dr. Alan Hedge at Cornell University suggests that for each 30 minutes an employee sit for 20 minutes, stand for 8 minutes, and walk around for 2 minutes. That adds up to more than 2.5 hours per day out of the chair.(3) Is it too much? For some perhaps it is. However, we could all probably stand more than we think if we look at the many ways we can work and conduct our days besides just sitting in a chair. Even if someone thinks that they can't, they probably can still move more. NASA research shows that standing for 2 minutes 16 times per day is enough to at least

maintain bone and muscle density. The following table lists many of those ways we can incorporate movement along with a brief discussion for each.(1, 10, 11)

Fig. 4
Possible solutions to decrease sedentary time in the office.

Method	Comments
Use a workstation or device that allows work to be done either sitting or standing.	Allows a great deal of flexibility for how long and frequently one could stand or sit. Though an initial cost may be associated with it, it tends to pay for itself over time when used correctly. Some types of furniture may not support this type of equipment and it may interfere with jobs that require personal interaction with others. Caution should be taken with individuals that have conditions aggravated by weight bearing postures.
Use a software solution that reminds employees to take breaks and/or guides them through brief movement or stretching routines.	Can conveniently be added to the individual's computer and usually customized to their needs. Some lose interest and bypass the reminders over time. A cost is typically involved, such as a licensing fee.
Send work to a remote printer.	Makes you take more steps unless this option is not be available or you don't print your work. No cost is associated.
Use a restroom on another floor or in another area.	Makes you take more steps unless multiple restrooms do not exist in the area. No cost is associated.
Visit someone instead of sending an email or text message.	Makes you take more steps. Face to face interaction can have social benefits and allow for easier discussion and dialogue. No cost is associated.
Take a walk during breaks or at lunch.	Makes you take more steps. Also, it provides a mental break from the tasks of the day. No cost is associated.
Take stairs instead of an elevator.	Makes you take more steps and you are working different muscles than walking unless stairs are not present. No cost is associated.
Take a mini break to stretch.	You can work on areas of the body that feel most stressed. It is a gentle and easy activity that costs nothing and can be practiced in any environment.
Hold small group meetings while walking.	Makes you take more steps. There is also evidence that walking stimulates the mind. It may not be practical for larger groups or if the meeting involves materials/technology. No cost is associated.
Conduct or participate in department sanctioned exercise sessions.	It can be a fun, focused, and work on areas of the body that feel most stressed. It can build rapport with co-workers. At least initially, more personal instruction and guidance needs to be given. Costs may or may not be associated based upon how this is implemented.

Strategically alternate tasks that require standing or moving. Alternatively, designate certain tasks as "standing tasks", such as talking on the phone.	This is a way to break up the repetition associated with certain work. Modification of some work tasks may be required. No cost is associated.
Use a device that tracks movement.	Gives biometric data to the user regarding activity and fitness. They can be fun to use. Cost for more technologically advanced devices can be a factor, but there are less expensive alternatives. (i.e. Fitbit vs. pedometer)

Most employees probably can't do all of these. Some might only be able to do a few. But when you look at what is possible, 2 hours of movement doesn't seem so insurmountable. Also, it should be noted that the majority of the actions outlined above are low or no cost to implement.

Fig. 5



Strategies for compliance and retention.

Motivation, compliance, and long term retention have been and will continue to be challenges that we all encounter when attempting to implement and administer movement programs. More people will want to participate in a program if they deem the exercise or activity as an achievable benefit to them, regardless of routine or complexity.(4, 12) Self-efficacy also increases the levels of compliance and adherence to a program over the long term.(12, 13, 14) Additionally, group cohesion, social support, and management involvement have proven to be morale boosters that increase rates of adherence to an exercise program.(13, 15) Conversely, poor psychosocial work environments and low self-efficacy have the opposite effect.(16) The following list contains some suggestions on how adopt and encourage an office activity program.

1. Encourage management buy-in and participation. This is extremely important for the goal of changing the organization's long term culture. It demonstrates leadership from the top, shows the value of your program to employees, and it's good for the managers' health too.
2. Have a fun name or tag line for the activity. Possibly incorporate a mascot or cartoon-like character as a symbol for the program.
3. Advertise the program – Keep the idea in front of staff. One might even be able to partner such a program with other safety or employee policy initiatives that are currently in place.
4. Have department schedule regular task break times.
5. Share information about the benefits of movement during the workday from multi-media sources. There has been a plethora of information recently in both print and visual media.
6. Solicit feedback from the employees about what they would like to do. Allow them to participate in the development or evolution of your program.
7. Train the employees and managers initially with preset, guided routines. This can also be reinforced with brochures, videos, PowerPoint presentations, etc.
8. Keep the activities and movements simple and easy to duplicate, especially in the beginning. Mimic some of the movements that people instinctively do to stretch and move. Encourage them to do them more frequently, beyond any group sessions. Additional complexity can be added once the program is established.

9. Provide department incentives or awards when possible, either for participation or for reaching certain milestones.

Like the methods of movement outlined above, one might not be able to incorporate all of these suggestions. For example, employees at a busy customer service counter can't just stop and all take a break together. They might have to focus on individual task breaks or maybe work with a partner instead. There is no "one" best or only way to promote and maintain a program. A multi-faceted approach is best…consistent and persistent.

CONCLUSION

The data in the workers' compensation column of *Figure 3* shows that approximately 73% of the total costs listed were related to physical inactivity. Internal data from all the CSU campuses show an expenditure of over 14 million dollars for workers' compensation from FY2011-FY2015. That amounts to a potential pool of over 10 million dollars that could have been positively impacted by efforts to encourage workers to move more.

Changing the culture and attitudes of our workplaces in regards to movement and exercise will have a positive effect on employee participation and ultimately their health and well-being. The suggestions outlined above are not meant to replace any efforts that may be in place, but to augment them. The more tools we can give, along with the encouragement and acknowledgement of achievements, the more it will help to move employees toward the positive end of a wellness continuum. Programs should be fluid and ever-changing as new ideas and information become available. They can also be customizable. No two initiatives need be exactly the same, though they should be constructed with the goal of increasing participation and adherence through an institutional and culture shift. Positive changes have the potential for improving employee morale, health, and productivity, which can lead to substantial cost savings for the employer over time.

REFERENCES

1. Biswas, Aviroop, Paul I. Oh, Guy E. Faulkner, Ravi R. Bajaj, Michael A. Silver, Marc S. Mitchell, and David A. Alter. "Sedentary Time and Its Association With Risk for Disease Incidence, Mortality, and Hospitalization in Adults." *Annals of Internal Medicine Ann Intern Med* 162.2 (2015): 123-32. Print.

2. Buckley, John P, Alan Hedge, Thomas Yates, Robert J Copeland, Michael Loosemore, Mark Hamer, Gavin Bradley, and David W Dunstan. "The Sedentary Office: An Expert Statement on the Growing Case for Change towards Better Health and Productivity." *British Journal of Sports Medicine Br J Sports Med* (2015). Print.

3. "Cornell University Ergonomics Web." http://www.ergo.human.cornell.edu/

4. Waikar, Avinash M., and Martha E. Bradshaw. "Exercise in the Workplace? Employee Preferences." *International Journal of Manpower*: 16-30.

5. Pressler, Axel, Uta Knebel, Sebastian Esch, Dominik Kölbl, Katrin Esefeld, Johannes Scherr, Bernhard Haller, Arno Schmidt-Trucksäss, Helmut Krcmar, Martin Halle, and Jan Marco Leimeister. "An Internet-delivered Exercise Intervention for Workplace Health Promotion in Overweight Sedentary Employees: A Randomized Trial." *Preventive Medicine*: 234-39.

6. "Too Much Sitting Can Be Deadly—even If You Exercise Regularly." 26 Jan. 2015. http://americablog.com/2015/01/sitting-can-deadly-even-exercise-regularly.html

7. Keeler, E B, W G Manning, J P Newhouse, E M Sloss, and J. Wasserman. "The External Costs of a Sedentary Life-style." *American Journal of Public Health* 79.8: 975-81. Print.

8. "The Economic Costs of Physical Inactivity, Obesity, and Overweight in California Adults: Health Care Workers' Compensation, and Lost Productivity." 1 Apr. 2005. https://www.cdph.ca.gov/HealthInfo/healthyliving/nutrition/Documents/CostofObesityToplineReport.pdf

9. "Cost of Excess Weight and Sedentary Lifestyles Is Enormous." 23 May 2007. https://www.anthem.com/wps/portal/ahpfooter?content_path=shared/noapplication/f0/s0/t0/pw_ad091614.htm&label=Press%20Room%20Archives%20-%202007

10. "Experts Offer Little Tips to Make Big Changes in Work Health ..." 23 June 2015. http://www.he.k-state.edu/news/2015/06/23/experts-offer-little-tips-to-make-big-changes-in-work-health/

11. Loffler, D., B. Wallmann-Sperlich, J. Wan, J. Knott, A. Vogel, and J. Hurtienne. "Office Ergonomics Driven by Contextual Design." *Ergonomics in Design: The Quarterly of Human Factors Applications* 23.3 (2015): 31-35. Print.

12. Rhodes, Ryan E, and Bonnie Fiala. "Building Motivation and Sustainability into the Prescription and Recommendations for Physical Activity and Exercise Therapy: The Evidence." *Physiotherapy Theory and Practice*: 424-41.

13. Chen, C.-Y., P. S. Neufeld, C. A. Feely, and C. S. Skinner. "Factors Influencing Compliance With Home Exercise Programs Among Patients With Upper-Extremity Impairment." *American Journal of Occupational Therapy*: 171-80.

14. Pedersen, Mette Merete, Mette Kreutzfeldt Zebis, Henning Langberg, Otto Melchior Poulsen, Ole Steen Mortensen, Jette Nygaard Jensen, Gisela Sjøgaard, Thomas Bredahl, and Lars Louis Andersen. "Influence of Self-Efficacy on Compliance to Workplace Exercise." *International Journal of Behavioral Medicine*: 365-70.

15. Fraser, Shawn, and Kevin Spink. "Examining the Role of Social Support and Group Cohesion in Exercise Compliance." *Journal of Behavioral Medicine* 25.3: 233-49.

16. Andersen, Lars L. "Influence of Psychosocial Work Environment on Adherence to Workplace Exercise." *Journal of Occupational and Environmental Medicine*: 182-84.