WORKPLACE SOLUTIONS

From the National Institute for Occupational Safety and Health

Using *Total Worker Health*® Concepts to Reduce the Health Risks from Sedentary Work

Summary

U.S. workplaces have become increasingly sedentary, with resulting negative health effects. Through its *Total Worker Health*® Program, the National Institute for Occupational Safety and Health (NIOSH) recommends an integrated approach to addressing sedentary work environments. An integrated approach is one that protects workers from work-related injury and illness and helps them advance their overall health and well-being, on and off the job. This document describes organizational practices that can reduce the risks associated with sedentary work.

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Sedentary Work

A sedentary job is defined as one that involves mainly sitting; though occasional walking, standing, and lifting (no more than 10 pounds) may be necessary to carry out duties [20 CFR* 404.1567]. More than 5 million U.S. workers hold management and professional positions, and 21 million work in office and administrative support occupations that involve long periods of sitting. More than 8 million people work in retail and sales jobs, most of which are either sedentary or stationary. Examples of retail occupations include cashiers, data entry, and call centers where service or sales employees often work in small cubicles or confined spaces [BLS 2016]. The number of workers who are sedentary is increasing worldwide [Shrestha et al. 2016], and long hours spent seated at work can increase health risks.

Code of Federal Regulations. See CFR in References.

Health Effects of Sedentary Work

Prolonged sitting is associated with back and shoulder pain, premature mortality, diabetes, chronic diseases, metabolic syndrome, and obesity† [Pronk et al. 2012; Schulte et al. 2007]. These risks may persist even if a worker engages in

†Other workplace factors, such as shift work, job stress, and certain chemical exposures are also associated with an increased risk of obesity. For more information, see Pandalai et al. 2013.

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recommended levels of physical activity during free time (150 minutes of cardiovascular activity per week)[‡] [Shrestha et al. 2016; HHS 2008]. Obesity is associated with occupational injury and decreased productivity at work. It may also be a co-risk factor for occupational asthma and can affect a worker's response to chemical exposures [Schulte et al. 2007].

Prolonged standing can lead to venous disorders, back pain, and other musculoskeletal disorders [Waters and Dick 2014]. Grandjean [1988] notes how sitting and standing impose stress on different muscles, and therefore states that, "a workplace which allows the operator to sit or stand, as he wishes, is to be highly recommended from a physiological and orthopaedic point of view." Thus, mobility is a key factor in counteracting the negative effects of both prolonged sitting and prolonged standing. Interruptions in prolonged sitting have been associated with improved metabolic profiles in adults [Pronk et al. 2012].

Total Worker Health®: An Integrated Approach

Total Worker Health (TWH) approaches are defined as policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts in order to advance employee well-being. According to NIOSH research on TWH, comprehensive practices and policies that take into account the work environment (both physical and organizational), while also addressing personal health risks, are more effective in preventing disease and promoting safety and health than each approach taken separately [NIOSH 2015a; Sorensen et al. 2013]. Traditional workplace safety and health programs have concentrated on the safety of the work itself and on protection from exposure. Traditional health promotion programs have promoted personal health and individual interventions as something separate from these issues. But TWH recognizes how work itself is a determinant of health and how factors such as stress, workload, autonomy, hours of work, and being sedentary can influence health outcomes (such as obesity and cardiovascular disease) [NIOSH 2015a; Schulte et al. 2007].

Organizational Support for Total Worker Health®

TWH prioritizes an emphasis on organizational-level policies, programs, and practices designed to protect workers and improve their health [NIOSH 2015a]. Organizations can lead through example and support positive peer influences within the work environment. Opportunities for organizations to help decrease sedentary time include offering the flexibility to have standing or walking meetings, or providing sit-stand workstations. Flexible rest breaks can be allowed to break up static posture if a job involves prolonged standing. Rest breaks can be implemented without a resulting decrease in performance [Galinsky et al. 2000].

[‡]Eighty percent of Americans don't meet the minimum guidelines of 150 minutes of cardiovascular activity per week.

Organizational Benefits of Total Worker Health®

Although TWH contends that the safety, health, and well-being of the worker are of primary importance, providing opportunities for promoting worker health (such as decreasing sedentary time and allowing time for physical activity) also has benefits to the employer. These benefits can be direct, such as the reduction of health-related expenditures and absenteeism, as well as indirect such as improved employee morale, advantages in recruitment and retention, and even reduced injury rates [Fabius et al. 2013]. Employers, workers, their families and communities all benefit from the prevention of disease and from sustained health that can result from increased physical activity [CDC 2014; Goetzel and Ozminkowski 2008].

Ergonomic Benefits

Addressing the health effects of sedentary work through management support and flexible rest breaks to promote health and prevent musculoskeletal injuries reflects the goals outlined in both the Occupational Safety and Health Administration (OSHA) Ergonomics Plan and the NIOSH Elements of Ergonomics Programs. For more information, see Elements of Ergonomic Programs: A Primer Based on Workplace Evaluations of Musculoskeletal Disorders and Protecting Workers from Ergonomic Injuries.

Potential Barriers to Reducing Sedentary Time at Work

Employers should also consider potential barriers to incorporating workplace strategies that can reduce sedentary time and improve worker health.

The lack of job control is a key barrier: jobs that have high demands but little employee input in decisions increase the risk for obesity [Schulte et al. 2007]. One study noted that workers most affected by diseases associated with sedentary jobs also had the lowest levels of autonomy at work. This study also noted job autonomy as the greatest facilitator of acceptance of active workstations [Cifuentes et al. 2015].

Environmental and facility-related issues are also important barriers. If changing facilities, showers, or locker rooms are not available at work, workers may not choose to take walks

outside, do intense stair climbing, or take advantage of interventions such as treadmill desks. Other barriers to acceptance of active workstations might include space considerations, noise of treadmills, speed of treadmills that affects productivity, and muscle pain (if workers are not trained in the use of active stations [Robertson et al. 2013]). Employers may also hesitate to accept active workstations since the health benefits are not seen as quickly as with cardiovascular exercise [see NIOSH 2015b for more information about the *Total Worker Health* webinar on sedentary work].

Another barrier to incorporating practices at work to promote health might be the physical demands of a job. It is important to note that physical exertion at work may not promote cardiovascular fitness [Holterman 2011]. Workers who perform heavy labor are often unable to control the intensity and duration of labor and frequency of rest breaks, which may lead to increased risk of cardiovascular disease. Fatigue from physically demanding jobs may prevent participation in physical activity during leisure time (i.e., walking during breaks) [Morse et al. 2012; Champagne et al. 2013; Baron et al. 2014].

As described in the principles of TWH, when addressing worker safety and health, an employer should consider these potential barriers and other factors that are part of the physical and organizational work environment [NIOSH 2015c]. Using a TWH approach to address these barriers offers opportunities to help reduce the effects of sedentary work.

Recommendations for Incorporating *Total Worker Health*® Concepts Into Workplace Safety and Health Programs

Employers should consider the following TWH concepts to reduce workers' sedentary time while at work [CDC 2014; Cifuentes et al. 2015; OHSU 2014; NIOSH 2015d; Goetzel and Ozminkowski 2008; Morse et al. 2012; Goetzel et al. 2014; HHS 2008, 2016; Waters and Dick 2014; Robertson et al. 2002; Grandjean 1988]:

- Include senior management support and worker participation in all health initiatives.
- Involve workers and labor representatives in designing and implementing procedures and practices to reduce sedentary work and promote physical activity.
- Ensure that any program striving to advance worker well-being has the commitment of organizational leadership.
- Evaluate existing resources and current policies, programs, and practices to assess what works to promote physical activity and what the future needs are.
- Offer workers more job autonomy, control over schedules and workloads, and control over the workstation and its setup so that they can take physical activity breaks after periods of sitting, or take rest breaks after prolonged standing or heavy labor.
- Educate management and supervisors on ways to reduce the job stress faced by workers, such as reducing demands or supporting rest and physical activity breaks.
- Ensure privacy:
  - Adhere to regulatory requirements such as the Americans with Disabilities Act, Health Insurance Portability and Accountability Act, Affordable Care Act, and applicable State laws. Make it clear to workers that they are protected from discrimination, adverse changes to health insurance status or costs, and confidentiality breeches.
  - Train all staff (including supervisors and managers) in privacy and confidentiality.
  - Remember that employee participation in any intervention is voluntary. Coercive incentives or disincentives should be avoided [Gellar 2005].
- Link existing worker safety and health programs to related programs such as employee assistance programs or related training efforts.
- Offer organizational and social support to encourage physical activity such as walking or biking to work or during breaks.
- Be aware of how the built environment can influence a worker's level of physical activity, and where possible, provide input into constructing a built environment that encourages activity (e.g., a work station that allows for movement, safe trails around the workplace, or fitness facilities onsite or nearby).
- Evaluate the program and make adjustments as needed.
- Include health education (information dissemination and awareness) about the effects of sedentary work and prolonged postures (in combination with the policies, programs, and practices that allow workers to reduce their sedentary time at work).

Employers should consider the following to help workers incorporate movement into their workday:

- Design workstations to allow for mobility and posture change:
  - Provide sit-stand workstations that allow workers to easily shift between seated and standing work tasks as best suits their needs.
  - If sit-stand workstations or treadmill desks are adopted, ensure that workers are trained in their use

in order to maximize their effectiveness and to prevent muscular discomfort or eye strain.[§]

- Allow for several short breaks throughout the day during which workers can engage in intense activity such as fast walking or stair climbing, or moderate mobility.

Workers can do the following to incorporate movement into their workday:

- Stand or move around every 30 minutes (or as needed).
- Stand while talking on the phone.
- Hold walking meetings.
- Park farther away from the worksite to increase walking time.
- Take the stairs instead of the elevator.

In addition, the Department of Health and Human Services recommends resistance training and 150 minutes per week of moderate to vigorous physical activity [HHS 2008].

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[§]One study showed that cycling work stations may not be ideal for maintaining productivity and reducing stress. For more information, see the presentation by Michael Sliter entitled *Laboratory Tests of Psychological and Performance Outcomes of Active Work Stations*, available at http://www.cdc.gov/niosh/twh/webinar.html (in the archived presentations of Sedentary Work: Implications and Interventions for Worker Safety and Health).

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For More Information

More information about the NIOSH Total Worker Health program can be found at http://www.cdc.gov/niosh/twh/letsgetstarted.html

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