

IF SITTING IS THE NEW SMOKING, WHAT DOES THIS MEAN
FOR EMPLOYERS? A LOOK AT POTENTIAL WORKERS'
COMPENSATION CLAIMS IN THE SEDENTARY WORKPLACE

by

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With life in the United States becoming more sedentary each day, the question arises as to what harm we are doing to our bodies when we sit at work for eight hours. As many studies have shown, sitting for prolonged periods of time is quite deleterious to our health. This Article addresses the question of whether injuries or diseases that can be tied to a sedentary workplace could be compensable under the workers' compensation scheme available in some form in all fifty states. The authors then analyze whether, if such harms are covered under workers' compensation, they should be compensable. That is, from a policy perspective, does it make sense to hold employers liable for such harms.

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INTRODUCTION

Life in the United States revolves around our comfort. We are surrounded by advertisements for lazy chairs, clapping devices that allow you to turn lights on and off without standing up, remote systems of all types for appliances and cars that allow you to operate them from your couch, and Amazon's newest innovation, Alexa, which allows you to find out all the latest news, information, and stream music in your home without lifting a finger. Walk into most rooms or offices and you will notice they are designed around comfort; and comfort has become synonymous with sitting. Americans spend the majority of their time sitting and the health consequences associated with prolonged sitting and inactivity are becoming increasingly pronounced in our society.

This Article will explore the dangers of sitting, particularly sitting at work, and ask the question as to where liability for sitting can and should be placed. We will first examine the medical issues associated with prolonged sitting. Then we will describe the particularized issues of sitting in the workplace and the accompanying medical problems that necessarily flow from the sedentary workplace. Next, this Article analyzes the structure of liability in the United States for workplace injury. We will explore in depth the possibility that medical problems caused by sitting may be compensable under the workers' compensation system. Finally, we will ask whether this makes sense from a policy perspective. We argue that allowing workers to receive workers' compensation for medical issues caused by a sedentary workplace is desirable because it places the full cost of workplace injury on the employer and, thus, forces the employer to pay for its own negative externalities. This, in turn, should lead to a workforce that is safer for employees because employers will have the incentive to eliminate or at least mitigate these externalities.

I. THE DANGERS OF SITTING

Sitting for prolonged periods of time is associated with a number of negative health outcomes, including increased risk of cardiovascular disease, type 2 diabetes, and cancer.¹ Our body is just designed to work bet-

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ter when we are standing.² In fact, one study compared adults who spent less than two hours a day in front of a TV or other type of screen-based entertainment with adults who spent more than four hours a day in front of such screens and researchers found that the latter group had a 125% increased risk in events associated with cardiovascular disease, when controlling for risk factors such as smoking and high blood pressure.³ More than half of the average person's waking life is spent in sedentary activity, including at a computer or commuting.⁴ Thus, sitting has certainly become an integral part of our lives and the question then becomes what to do to alleviate the negative health consequences from a sedentary lifestyle.

II. THE BENEFITS OF MOVEMENT

While researchers seem to agree on the dangers of sitting, there is less consensus on how to address the problem. Some researchers seem to suggest the dangers of sitting can almost completely be offset by concentrated physical exercise.⁵ According to Ulf Ekelund, et al., about 60 minutes of exercise offsets the health effects of an eight-hour sedentary workday.⁶ This seems to suggest that we can sit all day and undo the effects with a concentrated period of physical exercise. However, many other researchers disagree with this conclusion. These researchers conclude that concentrated periods of exercise are not enough to undo the effects of sitting for eight hours or more a day.⁷ As Biswas, et al. found, "prolonged sedentary time, independent of physical activity, is positively

¹ See James A. Levine, *What Are the Risks of Sitting Too Much?*, MAYO CLINIC (Sept. 4, 2015), <http://www.mayoclinic.org/healthy-lifestyle/adult-health/expert-answers/sitting/faq-20058005>; Steven Reinberg, *Sitting for Hours May Raise Type 2 Diabetes Risk*, WEBMD (Feb. 2, 2016), <https://www.webmd.com/diabetes/news/20160202/sitting-for-hours-may-raise-your-type-2-diabetes-risk#1>.

² See *The Dangers of Sitting: Why Sitting is the New Smoking*, VICT. STATE GOV'T BETTER HEALTH CHANNEL (Aug. 2016), <https://www.betterhealth.vic.gov.au/health/healthy-living/the-dangers-of-sitting> ("Humans are built to stand upright. Our heart and cardiovascular system work more effectively this way.").

³ Levine, *supra* note 1.

⁴ Aviroop Biswas, et. al., *Sedentary Time and Its Association With Risk for Disease Incidence, Mortality, and Hospitalization in Adults: A Systematic Review and Meta-analysis*, 162 ANNALS INTERNAL MED. 123, 123 (2015).

⁵ See Ulf Ekelund et al., *Does Physical Activity Attenuate, or Even Eliminate, the Detrimental Association of Sitting Time with Mortality? A Harmonised Meta-Analysis of Data from More Than 1 Million Men and Women*, 388 THE LANCET 10051, 1302–10 (2016) [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)30370-1/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)30370-1/fulltext).

⁶ *Id.*

⁷ See, e.g., David Dunstan et al., *Too Much Sitting—A Health Hazard?* 97 DIABETES RES. & CLINICAL PRAC. 373–74 (2012); Levine, *supra* note 1; Alice Park, *Sitting is Killing You*, TIME (April 2, 2014), <http://time.com/sitting/>.

associated with various deleterious health outcomes.”⁸ According to James Levine of the Mayo Clinic, this may be because the muscle activity needed for movement, including standing, “trigger[s] important processes related to the breakdown of fats and sugars within the body. When you sit, these processes stall—and your health risks increase.”⁹ Specifically:

The human body consumes energy in three main ways: every cell needs energy to go about its daily business, whether it’s a muscle cell that contracts and flexes or a liver cell that produces enzymes; we also need to break down the food that we eat; finally, we need energy to move, whether we’re pulling on a shirt or riding a bike. That latter energy—let’s call it activity energy—is further divided into the sweat-inducing kind that you use on the treadmill or in yoga and another kind, which scientists have cleverly called NEAT: non-exercise activity thermogenesis. This includes nearly everything you do requiring movement: folding the laundry, walking up a flight of stairs, running to catch a train, even fidgeting.

The human body is designed to move, and a moving body is a needy body, siphoning off calories to make sure every cell is doing what it’s supposed to do. But even when we’re not exercising, we’re moving and using energy. That’s why NEAT matters. A body that’s sitting isn’t expending energy, so the signals that normally result in you moving—and which, in turn, burn calories—start to check out, molecularly bored with not being called into duty. Meanwhile, the processes that build up fat get busier. When that happens, it gets harder and harder to get off the chair.¹⁰

Thus, it seems what people do in their time not devoted to exercise is quite important to maintaining their health. Additionally, medical researchers in Rochester, Minnesota, found that increased NEAT levels may be associated with increased engagement in activities.¹¹ The researchers, with the help of Apple, conducted an experiment whereby children were introduced to the “School of the Future.”¹² Sensors were strapped to the students to measure their NEAT levels as they used mobile stations holding their laptops to move around the classroom and work with each other.¹³ In short, the classroom was arranged so that the

⁸ Biswas, *supra* note 4, at 129–30.

⁹ Levine, *supra* note 1.

¹⁰ Park, *supra* note 7; see also Emily Singer, *Tackling the Dangers of Workplace Inactivity*, MIT TECH. REV. (August 12, 2011), <https://www.technologyreview.com/s/424997/tackling-the-dangers-of-workplace-inactivity/> (“Intensive exercise doesn’t affect the fat-metabolizing enzyme, so even daily workouts won’t necessarily protect people who spend eight hours a day sitting at a desk.”).

¹¹ Park, *supra* note 7.

¹² *Id.*

¹³ *Id.*

default was standing, not sitting.¹⁴ After two months, the researchers found that the students had doubled their activity level compared to the level in a traditional classroom.¹⁵ Additionally, teachers reported that the students were less likely to engage in frivolous movement, less likely to take bathroom breaks, and performed 20% better on state standardized tests than they had previously.¹⁶ Parents also reported a change in the students, noticing that they were more eager to do homework after school and appeared less stressed from their day.¹⁷

III. IMPLICATIONS FOR THE WORKPLACE

Certainly, these findings on the dangers of sitting have strong implications in the employment context. As our workplaces have become more sedentary, our risk of adverse health outcomes has necessarily increased:

Epidemiologic observations from the middle of the 20th century showed that men whose jobs involved sitting for prolonged periods had a twofold increased risk of cardiovascular disease compared with men whose jobs required physical activity. Elevated rates of cardiovascular events were reported for occupationally sedentary English bus drivers and mail sorters relative to more active bus conductors and postal workers . . . in the United States.¹⁸

Increases in technology have only exacerbated an already dire situation—leaving a large proportion of the American workforce sitting for most of the workday. According to a report published by Timothy Church, *et al.*, in the 1960s, nearly half of American private industry occupations required at least moderate intensity physical activity.¹⁹ Today, by contrast, only 20% demand that level of activity.²⁰ Accordingly, the researchers estimate that daily caloric expenditures at work have decreased by more than 100 calories in both women and men.²¹ They further conclude that this is responsible for “a large portion of the observed increase in mean U.S. weight over the last 5 decades.”²² Thus, the question must be asked: to what extent can and should employers be held liable for

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Marc T. Hamilton et al., *Too Little Exercise and Too Much Sitting: Inactivity Physiology and the Need for New Recommendations on Sedentary Behavior*, 2 CURRENT CARDIOVASCULAR RISK REP. 292, 293 (2008).

¹⁹ Timothy S. Church et. al., *Trends Over 5 Decades in U.S. Occupation-Related Physical Activity and Their Association with Obesity*, 6 PLOS ONE, May 2011, at 4.

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

negative employee health outcomes associated with a sedentary workplace? Before answering this question, however, we will examine what both government entities and private employers have been doing to improve the health of their sedentary workers.

A. *Governmental Responses at Home and Abroad*

Governmental response to the health hazards of sedentary workplaces in the United States has been fairly muted. Governmental approaches outside of the United States vary, but tend to be more proactive in their attempts to encourage and assist employers to create a more active workplace.

In the U.S., state and federal government responses have focused on encouraging employers to adopt healthy workplace practices and institute employee wellness programs.²³ The National Institute for Occupational Safety and Health (NIOSH) recently released guidelines for employers through its Total Worker Health program, which promotes 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 wellbeing.²⁴ NIOSH and state occupational health and safety administrations encourage employers to voluntarily adopt active workplace policies and designs by emphasizing how they can be beneficial for employers due to the resulting reductions in healthcare costs and absenteeism, as well as improved morale and productivity in the publication.²⁵ In 2014, Denmark became the first country to legally require employers to give workers the option of having a standing desk.²⁶ While not going so far as to mandate that employers to offer standing desks, Canada and Australia have taken on proactive campaigns to encourage employers to adopt workplace policies and designs that encourage workplace activity. Comcare, the Australian administrative agency tasked with reducing workplace harms, offers numerous resources for employers explaining the hazards of a sedentary workplace,

²³ See, e.g., N.M. DEP'T OF HEALTH, CHRONIC DISEASE PREVENTION & CONTROL BUREAU, WELLNESS AT THE WORK PLACE 8 (2009); *Fact Sheet Plus: Sit-Stand Computer Workstations*, OR. OCCUPATIONAL HEALTH & SAFETY ADMIN. (Jun. 2014), <http://osha.oregon.gov/OSHAPubs/factsheets/fs56.pdf>; L. Casey Chosewood & Constance C. Franklin, *NIOSH Takes a Stand*, CTRS. FOR DISEASE CONTROL AND PREVENTION: NIOSH SCIENCE BLOG (Dec. 5, 2012), <https://blogs.cdc.gov/niosh-science-blog/2012/12/05/sit-stand/>.

²⁴ SUSAN AFANUH & ANTOINETTE I. JOHNSON, NAT'L INST. FOR OCCUPATIONAL SAFETY & HEALTH, USING TOTAL WORKER HEALTH CONCEPTS TO REDUCE HEALTH RISKS FROM SEDENTARY WORK 1 (2017).

²⁵ *Id.* at 2.

²⁶ Larry Olmstead, *Office Fitness: Stand Up for Health & Turn Your Desk into a Gym*, FORBES (Aug. 14, 2014), <https://www.forbes.com/sites/larryolmsted/2014/08/14/office-fitness-stand-up-for-health-turn-your-desk-into-a-gym/#9427c203ab8d>.

the benefits of an active workplace for employers, and blueprints for creating a healthier work environment. Comcare has also engaged insurers in its push for a more active workplace; Medibank—Australia’s largest private health insurer—sought to develop an evidence-based intervention program to encourage a more active workplace with its Stand Up Australia program.²⁷ Stand Up Australia began by developing strategies for intervention at the organization, environmental, and individual levels to maximize the initiative’s efficacy.²⁸ Researchers began by conducting workshops on sedentary behavior with staff in workplaces where the program was piloted, brainstorming possible behavior change opportunities, and encouraging them to voice their support for the program to management.²⁹ They then introduced height-adjustable workstations into the workplaces by retrofitting existing office furniture, and centralized the location of printers and wastebaskets, creating an environment that encouraged movement.³⁰ Individual level strategies involved an initial one-on-one coaching session with Medibank representatives, with follow-up support over the phone that was tailored to the individual based on information gleaned from the initial coaching session.³¹ Results from the Stand Up Australia pilot and similar pilot programs suggest that its model is effective, with participants in the pilots reducing sedentary time over two hours per eight-hour workday.³²

Canada has taken on an even more aggressive approach with its Sit Kicker initiative. Canada’s Public Health Agency has allocated \$1,164,360 (CAD) over two years to implement the initiative in up to 1,500 workplaces across Canada.³³ The Sit Kicker initiative encourages workers to participate in a four-week challenge to interrupt sitting every half hour and stand more frequently, with the aim of helping workers develop new, healthier habits and an increased awareness of activity levels.³⁴ Participating workplaces will be provided with portable standing desks that can be used with laptops, tablets, phones, and other office devices, as well as posters, stickers, and other workplace supports.³⁵ The Sit Kicker initiative

²⁷ Maike Neuhaus et. al., *Iterative Development of Stand Up Australia: A Multi-Component Intervention to Reduce Workplace Sitting*, 11 INT. J. BEHAVIORAL NUTRITION & PHYS. ACTIVITY 1 (2014); Medibank, *Stand Up Australia Sedentary behavior in workers* (2009), http://www.medibank.com.au/Client/Documents/pdfs/Stand_Up_Australia.pdf.

²⁸ See Neuhaus, *supra* note 27, at 2.

²⁹ *Id.* at 3.

³⁰ *Id.* at 3.

³¹ *Id.* at 3.

³² See *Id.* at 6.

³³ *Government of Canada Invests in Program to Combat Sedentary Behaviour in the Workplace*, PUB. HEALTH AGENCY OF CAN. (March 16, 2017), https://www.canada.ca/en/public-health/news/2017/03/government_of_canadainvestsinprogramtocombat-sedentarybehaviourin.html?=&wbdisable=true (press release).

³⁴ *Id.*

³⁵ *Id.*

also has its own companion app (available on both iPhone and Android) that helps workers keep track of their standing time.³⁶

In 2015, nonprofit Ukactive released its *Blueprint for an Active Britain*, which makes a series of policy proposals to anchor physical health in the workplace.³⁷ Ukactive's proposal focused on both workers and employers in its blueprint. For workers, it proposed tax incentives and vouchers alongside public-private partnerships to make fitness equipment and facilities more accessible, and developing a community physical activity program for the long-term unemployed through the Department for Work and Pensions.³⁸ For employers, the *Blueprint* proposed a public-private research partnership to develop effective workplace wellness programs and resources for businesses to implement them, or to improve existing programs.³⁹ To ensure that employers of all sizes can introduce wellness programs into the workplace, the *Blueprint* also recommended conducting a review to fit small and medium-sized enterprises into independent networks consisting of nonprofit organizations and businesses of various sizes.⁴⁰

The *Blueprint* demonstrated how governmental entities can play an active role in pushing employers toward adopting workplace designs and policies that allow workers to be more active in the workplace and prevent hazards associated with sedentary work without imposing regulation. Since its release in 2015, Ukactive has worked with governmental entities both at the local and national levels to achieve the goals it set forth in the *Blueprint* and refined in its 2016 milestone review.⁴¹ Significantly, similar efforts could likely be replicated at the state level in the United States, allowing states to take action to improve the health of their workforces in the event that the federal government fails.

B. *Corporate Responses at Home and Abroad*

In addition to the actions of various governmental entities, companies around the world are taking it upon themselves to voluntarily establish programs to help increase worker health. Here, we will provide an

³⁶ *Id.*

³⁷ UKACTIVE, BLUEPRINT FOR AN ACTIVE BRITAIN 26 (2015), available at <http://www.sportsthinktank.com/uploads/ukactive-blueprint-for-an-active-britain-17.pdf>.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ See e.g., Rob Gibson, *Government Encourages Employers to get Their Staff Moving*, Ukactive (May 9, 2018), <https://www.ukactive.com/news/government-encourages-employers-to-get-their-staff-moving/>; Ukactive, *West Midlands Commits to Improving Physical Activity Levels* (June 29, 2018), <https://www.ukactive.com/news/west-midlands-commits-to-improving-physical-activity-levels>.

overview of what certain companies are doing and how it is contributing to the improvement of worker health.

It seems the majority of corporate efforts involving employee health center around wellness programs. Such programs often involve providing employees with subsidies to join a gym, participate in having a health assessment done, lose weight, etc. These wellness programs are generally directed at worker activity outside the workplace, although may have effects on workplace movement as well.⁴² For instance, Pegasystems, a software company in Cambridge, Massachusetts, has given its employees Fitbits (devices that can be worn on the arm and allow wearers to track their movements within a day) in order to incentivize them to move both at work and at home.⁴³ Teams of employees then compete on how many steps they take in a given day, motivating employees to move more both at work and at home.⁴⁴ Other companies similarly offer wellness programs hoping to increase the wellbeing of their employees and, thus, employees' overall productivity. For instance, American Express offers a program that provides free health coaching, screening, assessment, and nurse hotlines to employees.⁴⁵ GlaxoSmithKline offers a similar program, which also includes emotional and psychological support.⁴⁶ At ConAgra, employees get a bonus Health Savings contribution for participating in a health assessment.⁴⁷ CEMEX also offers a wellness program, including a vaccination program and weight loss programs.⁴⁸ The company also uses "medical diplomas" to help motivate employees. The company awards these diplomas to the employees in the top 25% for health measures during a certain period.⁴⁹ BP, for example, institutes a program challenging employees (to whom it provides Fitbits) to walk a million or more steps in one year.⁵⁰ Those who do are eligible for less expensive health benefits. Houston Methodist, a leading Texas medical center, also provides Fitbits to its employees and holds creative competitions among employees, even reaching to the level of the CEO.⁵¹ The goals of these corporate wellness

⁴² Singer, *supra* note 10 ("While many employers have introduced wellness programs to encourage workers to exercise and lose weight, few have tried to figure out ways to make office work itself less sedentary.").

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ SLOAN CTR. ON AGING & WORK AT BOS. COLLEGE, THE METLIFE STUDY OF GLOBAL HEALTH & WELLNESS: A LOOK AT HOW MULTINATIONAL COMPANIES ARE RESPONDING TO THE NEED FOR A HEALTHIER WORKFORCE 11 (2010) [hereinafter THE METLIFE STUDY].

⁴⁶ *Id.* at 16.

⁴⁷ Laura Vandercam, *Do Corporate Wellness Programs Really Boost Productivity?*, FAST COMPANY (July 24, 2014), <https://www.fastcompany.com/3033411/do-corporate-wellness-programs-really-boost-productivity>.

⁴⁸ THE METLIFE STUDY, *supra* note 45, at 21 tabl. 3.

⁴⁹ *Id.* at 20.

⁵⁰ *Id.*

⁵¹ *Id.*

programs are to build “a culture where employees *choose* to live a healthier lifestyle, rather than being forced to do so.”⁵²

While such programs are obviously somewhat beneficial to worker health and wellbeing, they do not target the problem of inactivity at work, and thus may not fully alleviate the health concerns posed by the sedentary workplace. Armed with emerging knowledge about the need for movement in the workplace, some companies have become frontrunners in the quest to get workers moving on the job. One example is The Motley Fool, a multi-media financial services company. In addition to the traditional wellness offerings of free spinning classes and boot camps, 50% reimbursement for registration fees for races and free personal training consultations, the company also tries to hosts various challenges aimed at increasing movement during the workday.⁵³ For instance, during “Active April,” employees were challenged to make one meeting a day an active one, resulting in people doing pushups during meetings and walking around the office while they met.⁵⁴ At Zappos, an online apparel shop based out of Las Vegas, employees are treated to Recess Tuesdays where, on a weekly basis, playground toys are placed on the outdoor plaza at the office and employees gather to play tetherball, volleyball, basketball, and other activities.⁵⁵ And at Draper, Inc., a manufacturing company based out of Indiana, the company decided to open a Wellness Park at the edge of the property that includes a walking track, workout stations, ping-pong tables and volleyball courts.⁵⁶ Employees are encouraged to make use of the facility during the workday and the wellness coordinator there has created a monthly newsletter which features “wellness superheroes” who are acknowledged by their co-workers for modeling healthy behaviors in the office.⁵⁷ LL Bean has a policy of three stretch breaks a day for employees, believing that the increased productivity gains from the breaks make them well worth it.⁵⁸ New Balance, an athletic shoe company based in Boston, decided to bring the movement culture surrounding the company directly into the workday. The company used the Organizations in MOTION pilot program to encourage roughly 750 employees to incorporate physical activity into their workdays every 30

⁵² Lindsay Rothfield, *7 Companies with Amazingly Unique Wellness Programs*, MASHABLE (May 15, 2015), http://mashable.com/2015/05/15/unique-corporate-wellness-programs/#4G.3_YrV3EqY.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ Olga Khazan, *Workplace Fitness: Employers Get Workers to Start Moving*, L.A. TIMES (May 15, 2011), <http://articles.latimes.com/2011/may/15/health/la-he-workplace-fitness-20110515>.

minutes.⁵⁹ Jack Groppe, the founder of Organizations in MOTION, who holds a Ph.D. in exercise science, notes that periodic movements should not be considered breaks, but rather ways to increase employee engagement and productivity.⁶⁰

Globally, companies have been experimenting with different ways to encourage employee movement in the sedentary workplace as well. The Danish Lan & Spar Bank, for example, was recognized for its “Movement Program.”⁶¹ This program first assesses the general health of individual employees and then gives them tailored advice on things like diet and how to incorporate more physical activity into their days.⁶² The Norwegian telecommunications company Telenor has designed its Oslo headquarters to help encourage employee movement.⁶³ The space includes more collaboration rooms, designed to encourage employees to move away from their desks and into groups to work.⁶⁴ Additionally, the number of coffee stations around the office were strategically reduced to encourage employees to move around the office when they were in need of their caffeine break.⁶⁵

C. Ideas for Future Improvement

In fact, it seems that workplace design may be the key to encouraging employee movement and collaboration. According to Jonathan Webb from the nonprofit Center for Active Design, so-called “active design” workspaces foster inherent movement in the workspace.⁶⁶ Webb recommends designing the office so that employees are encouraged and motivated to move around.⁶⁷ An open layout, preferably with lots of sunlight is one way to promote movement.⁶⁸ Additionally, designing the office space so that the stairs are visible and easily accessible will encourage more employees to use the stairs instead of the elevator.⁶⁹ One client Webb

⁵⁹ Alison Griswold, *To Work Better, Just Get Up from Your Desk*, FORBES (June 12, 2012), <https://www.forbes.com/sites/alisongriswold/2012/06/12/to-work-better-just-get-up-from-your-desk/#4cd634981c15>.

⁶⁰ *Id.*

⁶¹ Henriette Jacobsen, *Employees Told to Get Up and Exercise at Work*, EURACTIV (June 17, 2015), <https://www.euractiv.com/section/sports/news/employees-told-to-get-up-and-exercise-at-work/>.

⁶² *Id.*

⁶³ Ben Waber et. al., *Workspaces That Move People*, HARV. BUS. REV., (2014).

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ Andie Burjek, *Some Offices Designing Ways to Help Employees Move More*, WORKFORCE (Feb. 2, 2017), <http://www.workforce.com/2017/02/22/offices-designing-ways-help-employees-move/>.

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *Id.*

worked with, whose staircases were in the back of the building, removed the heavy set of doors leading to the stairs, repainted the hallways a brighter, more enticing color, added brighter lights and wall graphics and included informational posters on the walls telling employees how many extra calories they would burn by taking the stairs instead of the elevator.⁷⁰

Many companies incorporate standing desks into their employees' offices. Such desks have been found to lead to improved productivity. Specifically:

Research by the Texas A&M Health Science Center School of Public Health found that employees in a call center who used standing desks for a six-month period were 46 percent more productive than colleagues who used standard desks.

The study cited past work that found people using desks that allow them to stand at least part of the time show increased cognitive performance. It concluded that "individuals that have the opportunity to stand throughout the day can operate at higher productivity levels than those that do not have the capability to stand while working."⁷¹

Such desks generally are adjustable and allow users the option to sit or stand while working at their computers. Increasing the frequency and variety of employees to whom such desks are offered would be a systemic way to help improve worker health in the sedentary workplace. Additionally, some workplaces offer treadmill desks, which allow employees to actually walk as they do work, although these are generally much more expensive than adjustable standing desks.⁷²

Other ideas that are promising for encouraging workplace movement by employees are ergonomic desk chairs that have stretchy bands attached and function as a weight machine.⁷³ Such chairs allow employees to move even while on phone calls or in office meetings. Additionally, Dr. Toni Yancey, a professor of health sciences at UCLA School of Public Health, has developed a DVD with "Instant Recess" exercises that allow employees to take 10-minute structured work breaks during the day.⁷⁴ The exercises, which come in a set of three 10-minute sets, include marching in place and simple shoulder presses.⁷⁵

⁷⁰ *Id.*

⁷¹ Russ Huppke, *Study Shows Standings Desks Boost Productivity*, CHI. TRIBUNE (May 26, 2016), <http://www.chicagotribune.com/business/careers/ijustworkhere/ct-huppke-work-advice-standing-desks-0529-biz-20160526-column.html>.

⁷² Khazan, *supra* note 58.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

The companies who are adopting these methods of mobilizing their otherwise sedentary workplaces are certainly ahead of the curve. But what of the companies that are not? Are they setting themselves for potential workers' compensation liability should a worker develop a condition related to the sedentary nature of his or her work? The rest of this Article will explore this possibility, starting first with a look at the origins of workers' compensation laws.

IV. HISTORICAL ORIGINS AND DEVELOPMENT OF WORKERS' COMPENSATION LAWS

The notion that an employer should bear the financial burden of remedying work-related harm has deep roots in the common law. The Laws of Henry I, written in the twelfth century, articulates a rudimentary form of the principle:

And in some cases a man cannot legitimately swear that another was not, through himself, further from life and nearer to death; among which cases are these: If anyone, on the mission of another, is the cause of death in the course of the errand; if anyone sends for someone, and the latter is killed in coming; if anyone meets death having been called by another⁷⁶

This approach to workplace harms was grounded firmly in the tort principle of but-for causation and remained virtually unchanged for centuries.⁷⁷

The first documented notable evolution of the legal treatment of workplace harms came in the eighteenth century with the development of vicarious liability of the master for the acts of servants.⁷⁸ *Respondeat superior* was sweeping in its scope at its inception, and did not explicitly limit liability to harm caused to non-servants.⁷⁹ In 1837, however, Lord Abinger's decision in *Priestly v. Fowler* created the fellow-servant exception to the general rule of the employer's vicarious liability, marking the beginning of a period of contraction in employer liability for occupational harm.⁸⁰ American law quickly adopted the fellow-servant exception,⁸¹ which absolves employers of liability for harm that comes to one employee as a result of a coworker's negligence, provided that the employer

⁷⁶ Arthur Larson, *Nature and Origins of Workers' Compensation*, 37 CORNELL L. REV. 206, 221 (1952) (citing *Leges Regis Henrici Primi*, XC, 6).

⁷⁷ *See id.* at 222.

⁷⁸ *Id.* at 222–23.

⁷⁹ *Id.* at 223.

⁸⁰ *Id.* In *Priestly*, Lord Abinger held that a master butcher was not liable for an injury the plaintiff, an employee, sustained after another employee overloaded a van and caused it to break down. *Id.*

⁸¹ *Id.*

wasn't negligent in hiring or retaining the coworker and generally provided a reasonably safe workplace.⁸²

The early nineteenth century saw two other employer defenses develop that, together with the fellow-servant exception, largely shielded them from any liability for occupational harm: assumption of the risk and contributory negligence.⁸³ In addition to creating the fellow-servant exception, *Priestly v. Fowler* laid the foundation for assumption of the risk as a defense to employer liability when Lord Abinger stated:

[T]he servant is not bound to risk his safety in the service of his master, and may, if he thinks fit, decline any service in which he reasonably apprehends injury to himself; and in most of the cases in which danger may be incurred, if not in all, he is just as likely to be acquainted with the probability and extent of it as the master.⁸⁴

The third of the common-law employer defenses, contributory negligence, was first recognized in *Butterfield v. Forrester* in 1809.⁸⁵ Recognition of contributory negligence as a defense meant that even if a worker was able to prove that his employer's negligence was the cause of an occupational harm, any negligence of his own—even of a much smaller magnitude—meant that he would still be left without a remedy.⁸⁶

By the end of the nineteenth century, high rates of accidents in the industrial workplace and insufficient availability of remedies combined with influences from the German and British workers' compensation systems laid the groundwork for enacting the modern American workers' compensation system.⁸⁷ The American system was intended to be a grand bargain between workers and employers: employers accepted no-fault legal framework and the loss of the three common-law defenses, and workers accepted compensation that was limited to direct pecuniary losses, but was much more predictable and widely-available.⁸⁸ Statutes require employers to purchase workers' compensation insurance, which may be privately funded, publicly funded, or be a public-private hybrid, depending on jurisdiction.⁸⁹ These insurance policies compensate workers for medical costs and some portion of the employee's earnings.⁹⁰ The amount of compensation for lost earnings varies according to the degree and duration that a worker is disabled: temporary total, temporary par-

⁸² *Baltimore & O.R. Co. v. Baugh*, 149 U.S. 368, 379 (1893).

⁸³ Larson, *supra* note 76, at 224.

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.* at 231–32.

⁸⁸ Martha T. McCluskey, *The Illusion of Efficiency in Workers' Compensation "Reform,"* 50 RUTGERS L. REV. 657, 670 (1998).

⁸⁹ *Id.* at 671.

⁹⁰ *Id.*

tial, permanent total, and permanent partial.⁹¹ Whether a harm is work-related is decided through an administrative process rather than court proceedings in virtually all cases,⁹² and workers must only prove that a harm is work-related (as opposed to being required to prove fault) to establish employer liability for the harm.⁹³ Workers' compensation statutes also bar tort claims—and the pain and suffering damages that they make available—for work-related harms, making the workers' compensation system the exclusive avenue for relief.⁹⁴

V. LEGAL FRAMEWORK

Before delving into the potential compensability of claims stemming from the sedentary nature of a workplace, it is necessary to explore the legal frameworks that have developed for different kinds of workplace harms, and to place sedentary workplace claims within the existing frameworks.

The no-fault system of modern workers' compensation statutes eschewed analyses of fault in favor of a test that only analyzes the relationship of a harm to employment when determining compensability.⁹⁵ Statutory language generally deems a harm compensable if it arises out of and in the course of employment.⁹⁶ Virtually all jurisdictions also require the harm to be accidental, and that the accident can be reasonably traced to a time, place, and occasion or cause in order to be compensable.⁹⁷

The statutory language, that a harm must arise out of and in the course of employment, sets the basic compensability requirement that the medical cause of a harm be work-connected in a manner that satisfies the applicable standard for legal causation.⁹⁸ Recent social epidemiological studies have found connections between low levels of workplace activity and conditions like myocardial infarctions, strokes, and pulmonary

⁹¹ *Id.*

⁹² *Id.* at 671–72.

⁹³ *See id.* at 670.

⁹⁴ *Id.*

⁹⁵ 1 ARTHUR LARSON ET AL., LARSON'S WORKERS' COMPENSATION § 3.01 (Matthew Bender Rev. ed., 2017). This Article will use the term “harm” when speaking in general terms for the sake of clarity; the common medical understanding of the terms “injury,” “illness,” and “disease” do not map perfectly onto their uses in workers' compensation law and can cause unnecessary confusion when not discussing specific cases.

⁹⁶ *Id.* at §§ 1.01–1.04; Holly Fernandez Lynch, *Human Research Subjects as Human Research Workers*, 14 YALE J. HEALTH POL'Y L. & ETHICS 122, 167 (2014).

⁹⁷ 3 ARTHUR LARSON ET AL., LARSON'S WORKERS' COMPENSATION §§ 42.01–42.03 (Matthew Bender Rev. ed., 2016).

⁹⁸ LARSON ET AL., *supra* note 95, at § 3.02.

embolisms,⁹⁹ indicating that a work connection does indeed exist, as discussed *supra*. Causation standards vary quite widely between jurisdictions,¹⁰⁰ and would of course affect case outcomes, but for the sake of simplicity our theoretical analysis will assume that causation is satisfied. It is the second dimension of the analysis, accident and its temporal definitiveness, that will have substantial bearing on the potential viability of a sedentary workplace claim and warrants closer inspection.

A. *The Accident Requirement and the Taxonomy of Occupational Harms*

It is universally accepted that unexpectedness is at the core of the meaning of “accident.”¹⁰¹ However, the accident requirement creates substantial complexity in evaluating the compensability of a claim, raising the question of whether the cause of a harm or the resulting harm itself must be unexpected and occupy a reasonably definite point in time for the harm to be considered accidental in nature.

In practice, an accidental cause *or* an accidental result may, on its own, be sufficient to satisfy the accident requirement.¹⁰² Larson breaks down the accident concept into its component parts as follows:

1. Unexpectedness
 - a. Of cause
 - b. Of result
2. Definite time
 - a. Of cause
 - b. Of result¹⁰³

These component parts create a spectrum of occupational harms, and whether the harm is treated as an accident will vary along each point in the spectrum.¹⁰⁴ Where the cause and the result are both unexpected and temporally definite a typical industrial accident has occurred, like a collision that causes traumatic injury.¹⁰⁵ Where the cause is gradual and the resulting harm has a gradual onset and is a not unexpected result of

⁹⁹ Irene Braithwaite et. al., *Venous Thromboembolism Risk Associated with Protracted Work and Computer-Related Seated Immobility: A Case-Control Study*, 7 J. R. SOC. MED., Feb. 12, 2016, at 2; Eleonor Fransson et. al., *The Risk of Acute Myocardial Infarction: Interactions of Types of Physical Activity*, 15 EPIDEMIOLOGY 573 (2004); Siobhan Gallanagh et. al., *Physical Inactivity in the Prevention and Treatment of Stroke*, 2011 INT’L SCHOLARLY RESEARCH NETWORK NEUROLOGY, Aug. 4, 2011, at 2.

¹⁰⁰ LARSON ET AL., *supra* note 95, at §§ 3.04–3.05.

¹⁰¹ LARSON ET AL., *supra* note 97, at § 42.02.

¹⁰² *Id.* at §§ 43.01–43.05.

¹⁰³ *Id.* at § 42.02.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

long-term employment in a particular industry, the harm is an occupational disease,¹⁰⁶ like asbestosis or byssinosis. In the middle ground between these two extremes lie harms caused by routine workplace exertion or exposure.¹⁰⁷

Larson splits routine exertion cases into four broad categories: routine exertion causing breakage, routine exertion causing harm from generalized conditions, routine exposure causing freezing or sunstroke, and routine exposure causing disease.¹⁰⁸ The latter two categories do not encompass the types of harms a worker would incur as a result of a sedentary workplace, so we will focus our discussion on the two former.

The first category, routine exposure causing breakage, refers to cases where the harm is some sudden mechanical or structural change in the body caused by routine exposure to a work condition.¹⁰⁹ The majority of jurisdictions will treat harms in this category as accidental even in cases where there is no unusual quality to the workplace exertion, but a minority require a showing of an unusual workplace exertion for the harm to satisfy the accident requirement.¹¹⁰

Examples of usual-exertion cases in this category include: a lumber mill worker who suffered a stroke in the course of his ordinary work, an accounting executive who suffered a fatal stroke due to job stress, and a construction worker who suffered a stroke caused by propane inhalation while searching for work material.¹¹¹ In all three cases, expert medical testimony established the requisite causal link to the employees' work.¹¹²

The second category, routine exertion causing harm from generalized conditions, refers to cases where routine exposure to a work condition causes a sudden harm that has a less obvious structural or mechanical change in the body.¹¹³ While most jurisdictions will deem these harms accidents when they are the result of usual exertion in the workplace, a

¹⁰⁶ *Id.* While occupational diseases are compensable, some jurisdictions enumerate which diseases are compensable or require that the worker's job duties place her at some peculiar risk of contracting a given disease. 4 LEX K. LARSON ET AL., LARSON'S WORKERS' COMPENSATION § 52.03 (Matthew Bender Rev. ed., 2016). Other jurisdictions fit occupational diseases into the accident formula by treating each exposure to the cause of a disease as an accidental occurrence. *Id.* at § 50.04.

¹⁰⁷ LARSON ET AL., *supra* note 97, at § 42.02.

¹⁰⁸ *Id.* at § 43.02.

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Burns v. Dir., Office of Workers' Comp. Programs*, 41 F.3d 1555, 1557–58 (D.C. Cir. 1994); *Harper v. Banks, Finley, White & Co.*, 167 So. 3d 1155, 1158 (Miss. 2015); *Forest Products v. Parvin*, 532 S.W.2d 908, 908 (1975).

¹¹² *Burns*, 41 F.3d at 1559; *Harper*, 167 So. 3d at 1163–64; *Parvin*, 532 S.W.2d at 909.

¹¹³ LARSON ET AL., *supra* note 97, at § 43.03.

large minority require a showing of unusual exertion or that claimants meet special requirements before the harm will be deemed accidental.¹¹⁴

Typical usual-exertion cases in this category include: a sanitation worker who suffered a myocardial infarction while collecting garbage, a powerhouse operator who suffered a heart attack from job stress, and an auto worker who suffered from right rotator cuff tendinitis, right rotator cuff bursitis, and right shoulder impingement syndrome from repetitive movement.¹¹⁵ In both heart attack cases, medical testimony established that the workers' jobs exacerbated preexisting arteriosclerosis, and in the third case, medical testimony established that job-related repetitive motions were the sole cause of the harm.¹¹⁶

It is worth noting that the distinction between the types of harms included in the first and second categories is, from a medical perspective, something of a false dichotomy.¹¹⁷ For example, a ruptured aorta will be viewed as a breakage, but heart failure resulting from coronary thrombosis will not, even though blood clots obstructing blood flow is just as readily observable and temporally definite.¹¹⁸ However, many courts continue to draw the distinction, so it must have a place in the present discussion.

The unusual exertion or other special showing some jurisdictions require before they will find accident is its own curiosity. Larson notes that the justifications for these showings given by courts speak, in reality, not to whether or not an accident occurred, but whether the harm a worker suffered was actually work-related.¹¹⁹ In other words, these special showings are really about causation, not accident, even though they are largely attributed to the accident requirement.¹²⁰

The treatment of things like myocardial infarction, stroke, and pulmonary embolism indicate that sedentary workplace claims would be compensable in usual-exertion jurisdictions, assuming expert medical testimony could satisfactorily establish the work connection. While possible, successful sedentary workplace claims by office workers would be substantially more difficult to establish in unusual exertion jurisdictions. This is simply because it would be difficult to characterize a job as unusually sedentary, except perhaps if a worker worked substantially more hours than the usual office worker.

¹¹⁴ *Id.*

¹¹⁵ *Grainger v. Alaska Workers' Comp. Bd.*, 805 P.2d 976 (Alaska 1991); *Muscle Shoals v. Davis*, 406 So.2d 919, 920 (Ala. Civ. App. 1981); *Warner v. DMAX, Ltd.*, 46 N.E.3d 202, 204 (Ohio App. 2d. Dist. 2015).

¹¹⁶ *Grainger*, 805 P.2d at 978-79; *Davis*, 406 So. 2d at 921; *Warner*, 46 N.E.3d at 204.

¹¹⁷ See LARSON ET AL., *supra* note 97, at § 45.03.

¹¹⁸ *Id.*

¹¹⁹ *Id.* at § 46.01.

¹²⁰ *Id.*

A few jurisdictions have considered sedentary workplace claims where workers suffered pulmonary embolisms. These jurisdictions have applied their respective tests used in cases of routine exposure causing harm from generalized conditions, and, as predicted, outcomes have been heavily influenced by whether the jurisdiction requires unusual exertion or some other special showing.

B. *The Pulmonary Embolism Cases*

The cases that have considered sedentary workplaces as the causes of pulmonary embolism (PE) illustrate the impact of unusual exertion or other special showing requirements on claim outcomes. The cases in the following sections are not all of the cases where claims implicated sedentary work, but the available opinions in the cases that were not included were not sufficiently detailed for extensive examination.

1. *In Unusual Exertion Jurisdictions*

Sedentary workplace claims were rejected in most of the unusual exertion or special rules cases, but two in particular demonstrate cases where courts may be willing to find that claimants have satisfied the requirements.

In *Renner v. AT&T*, New Jersey's Supreme Court considered the case of a widower seeking dependency benefits after his wife died of a pulmonary embolism.¹²¹ The claimant argued, supported by expert medical opinion, that the sedentary nature of Renner's job materially contributed to her fatal PE.¹²² AT&T's expert witness, on the other hand, testified that Renner's other risk factors—obesity, using birth control, age, and enlarged heart—were the true cause of her PE, and that her leisure-time activity level was virtually the same as her work-time activity level.¹²³ While lower courts held in the claimant's favor, applying New Jersey's vascular claims standard, the Supreme Court reversed on the basis that the decedent, who primarily worked from home, was not required to remain seated.¹²⁴ The implications of this holding will be discussed further *infra*.

Two sedentary workplace cases involving truck drivers highlight the diversity that exists even among jurisdictions that require a heightened showing to prove accident. In Arkansas, the Division of Workers' Compensation flatly rejected a claim by a truck driver that his pulmonary embolism was a compensable injury, stating he failed to produce the required proof that "the work he was performing, at the time that his condition manifested itself, was extraordinary and unusual in comparison with his usual work or that some unusual and unpredicted incident oc-

¹²¹ *Renner v. AT&T*, 95 A.3d 201, 202 (N.J. 2014).

¹²² *Id.* at 202, 203.

¹²³ *Id.* at 204.

¹²⁴ *Id.* at 205.

curred which was the major cause of his injury.”¹²⁵ In Nebraska, on the other hand, a truck driver’s claim that his PE was caused by his sedentary work was not rejected because of Nebraska’s special rule (“the exertion or stress encountered during employment [must be] greater than that experienced during the ordinary non-employment life of the employee or any other person.”¹²⁶), but because the medical expert whose testimony was credited testified that the PE was actually a result of an insufficient dose of anticoagulants prescribed to him after prior incidents of pulmonary embolism that were unconnected to his employment, rather than his work as a truck driver.¹²⁷

Finally, a Virginia case points to another possible context in which prolonged sitting might be deemed an unusual exertion. In *Luckscheiter v. Warner Lambert Co.*, the claimant developed deep vein thrombosis (DVT) and suffered a PE after spending a substantial amount of time sitting in meetings and on long plane rides over a three-week period.¹²⁸ Virginia’s Workers’ Compensation Commission held that the PE was compensable because expert testimony established that frequent, prolonged air travel contributed to the development of DVT which precipitated the PE.¹²⁹ Notably, while the claimant did have one other risk factor for PEs—she used birth control—it ultimately did not affect compensability because expert testimony established that it was only a small risk, and no expert attributed her PE to birth control use.¹³⁰

While *Luckscheiter* is an occupational disease case, Virginia requires that occupational disease claimants show that so-called “ordinary diseases of life” “ar[i]se out of and in the course of the employment . . . d[o] not result from causes outside of employment, and . . . [be] caused by conditions peculiar to the employment.”¹³¹ That the frequent, long-distance air travel was sufficient to satisfy the peculiarity to employment requirement hints that it may also be sufficient to show an unusual exertion.

2. *In Usual Exertion Jurisdictions*

Two cases involving truck drivers in usual exertion jurisdictions easily found that their PEs were compensable.

In *Johnson v. E. W. Motor Express*, a long-haul truck driver’s PE was compensable where credited expert medical testimony established that

¹²⁵ *Flemming v. P.A.M. Transp., Inc.*, No. G011154, 2014 WL 2573126, at *1 (Ark. Wrk. Comp. Comm’n May 12, 2014).

¹²⁶ *Wingfield v. Hill Bros. Transp., Inc.*, 846 N.W.2d 617, 622–23 (Neb. 2014).

¹²⁷ *Id.* at 625.

¹²⁸ *Luckscheiter v. Warner Lamber Co./Agouron Pharmaceutical, Inc.*, No. 200-88-32, 2002 WL 31116876, at *1 (Va. Wrk. Comp. Comm’n Aug. 28, 2002).

¹²⁹ *Id.* at *2–3.

¹³⁰ *See id.* at *2–4.

¹³¹ *Id.* at *3.

the long hours she spent sitting were a major contributing cause.¹³² Similarly, in *Patco Trucking v. Workers' Comp. App. Bd.*, a long-haul truck driver's DVT and PE were compensable work injuries where expert medical testimony established, by a preponderance of the evidence, that the claimant's work contributed to his injury.¹³³ In both cases, the claimants had genetic mutations that made them more susceptible to DVT and PEs, but because medical testimony was able to establish the requisite causal link between the claimants' work and their PEs, the PEs were compensable.¹³⁴

3. Potential Policy Implications

Recognition of sedentary workplace cases have a host of potentially large policy impacts, the true range of which cannot be discussed in this Article. Two policy questions do, however, stand out particularly clearly: what do sedentary workplace claims mean for the employer's duty under the Occupational Health and Safety Act ("OSH Act")? And if the workers' compensation system isn't addressing illnesses related to the sedentary nature of work, where has the burden shifted?

a. *The Employer's Duty to Provide a Reasonably Safe and Healthful Work Environment*

The OSH Act confers on employers a general duty to "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."¹³⁵ This general duty covers areas in which there is no relevant, specific governing standard.¹³⁶

The Occupational Health and Safety Administration could use its general duty authority to spur changes in workplace design that would help to prevent inactivity-related conditions. Predictions about what that kind of enforcement might look like and what potential reactions to it might be may be made by examining the reaction to repetitive strain injuries, which Larson places in the same category as heart attacks—routine exertion causing harm from generalized conditions—which have heavily influenced the treatment of sedentary workplace claims in jurisdictions that have addressed them.

b. *Workplace Design and Workers' Compensation "Reform"*

Repetitive strain injury (RSI) claims nearly quadrupled between 1984 and 1990,¹³⁷ and in 1990, Secretary of Labor Elizabeth Dole declared

¹³² No. 260 1998/99, 2001 WL 1241035, at *1 (S.D. Dep't Lab. July 31, 2001).

¹³³ No. C047057, LEXIS 298, at *3–7 (Cal. Wrk. Comp. Aug. 19, 2004).

¹³⁴ *Id.*; *Johnson*, 2001 WL 1241035, at *1.

¹³⁵ 29 U.S.C. § 654(a)(1) (2017).

¹³⁶ *Chao v. Mallard Bay Drilling, Inc.*, 534 U.S. 235, 240–41 (2002).

¹³⁷ Denis Paul Juge et. al., *Cumulative Trauma Disorders—“The Disease of the 90s”: An Interdisciplinary Analysis*, 55 LA. L. REV. 895, 897 (1995).

them one of “the nation’s most debilitating across-the-board worker safety and health illnesses”¹³⁸ before announcing that the Department of Labor would attempt to address ergonomic hazards in the workplace.¹³⁹ While the Occupational Health and Safety Administration’s (OSHA) attempts to promulgate ergonomics rules would eventually be scuttled,¹⁴⁰ RSI claims persisted and have been one of the driving forces behind efforts to reform workers’ compensation laws.¹⁴¹ Legislative measures aimed at limiting claims on RSIs and other conditions perceived to be putting too much financial strain on the workers’ compensation system ranged from heightening causation standards to outright restricting the compensability of gradual harms to limiting disability payments.¹⁴²

Many of the reforms that were (at least in part) aimed at limiting RSI claims would likely also limit sedentary workplace claims. For example, attempts to raise causation standards included things like requiring claimants to show that their work was a *substantial* cause of the harm rather than just *a* cause¹⁴³ or to show that certain harms were caused by “extraordinary” or “unusual” events.¹⁴⁴ In fact, the impact of the extraordinary or unusual requirement was already demonstrated in *Flemming v. P.A.M. Transp., Inc.*, *supra*. Arkansas requires that claimants show cardiovascular, pulmonary, and cerebrovascular ailments were caused by “extraordinary and unusual” work or by an “unusual and unpredicted incident,”¹⁴⁵ and that requirement is what ultimately defeated the PE claim.¹⁴⁶

Because many of these reforms that have already been undertaken would limit sedentary workplace claims, whether the jurisdictions that have undertaken them would create further restrictions on workers’ compensation claims is an open question; they might find further reform unnecessary if most claims would already be unsuccessful. However, there remains a possibility that jurisdictions that have not undertaken restrictive reforms would enact them.

On the other hand, rises in RSI claims have also spurred employers to voluntarily incorporate ergonomics into their workplace designs,¹⁴⁷

¹³⁸ Adam M. Finkel & Jason W. Sullivan, *A Cost-Benefit Interpretation of the “Substantially Similar” Hurdle in the Congressional Review Act: Can OSHA Ever Utter the E-Word (Ergonomics) Again?*, 63 ADMIN. L. REV. 707, 725 (2011).

¹³⁹ *Id.*

¹⁴⁰ *Id.* at 726.

¹⁴¹ See McCluskey, *supra* note 88, at 769.

¹⁴² See *id.* at 789.

¹⁴³ *Id.* at 792.

¹⁴⁴ *Id.* at 799.

¹⁴⁵ ARK. CODE ANN. § 11-9-114(b)(1) (2016).

¹⁴⁶ *Flemming v. P.A.M. Transp., Inc.*, No. G011154, 2014 WL 2573126, at *1 (Ark. Wrk. Comp. Com.).

¹⁴⁷ Theresa A. Cortese, *Cumulative Trauma Disorders: A Hidden Downside to Technological Advances* 11 J. CONTEMP. HEALTH L. & POL’Y 479, 489–90 (1995).

which raises the possibility that at least some employers would voluntarily shift workplace designs to make them less sedentary in order to avoid having to defend themselves from sedentary workplace claims.

4. *Renner—A Return to Contributory Negligence?*

One of the concerns surrounding heightening causation requirements is that it would allow analysis of the worker's role in causing the claimed harm, marking something of a return to nineteenth-century contributory negligence analyses.¹⁴⁸ This concern seems validated by the New Jersey Supreme Court's opinion in *Renner v. AT&T*. New Jersey requires those making cardiovascular or cerebrovascular claims to prove that "the injury or death was produced by the work effort or strain involving a substantial condition, event or happening in excess of the wear and tear of the claimant's daily living."¹⁴⁹ In denying the claim for dependency benefits, however, the court stated:

In discharging her work duties she read, took telephone calls, sent and received e-mails, had conferences with her superiors and co-workers and made decisions. Unlike certain other occupations in which prolonged confinement in a cramped space is a job requirement, [the decedent]'s responsibilities did not require her to remain in a seated position for long, uninterrupted stretches of time. She was not confined to a specific space or instructed not to move from her workstation. Moreover, at both her home and employer workstations, [she] had control over her body position and movement while working. She was free to take breaks, during which she could stand, stretch, leave her workstation for a bathroom break or refreshments, or briefly exercise. At home, nothing prevented [her] from conducting conference calls while standing or reclining.

In short, [she] was free to move around at will during her work hours. Prolonged sitting, uninterrupted by breaks to stand, walk or exercise, was not a condition compelled by her job. The fact that [her] hours were long, or that the job was "deadline-driven," undoubtedly added to the challenge of her job. However, the fact that [she] sat for long periods of time in one position is not, under the facts presented, a component of her work effort or strain, as section 7.2 [of the Workers' Compensation Act] requires.¹⁵⁰

While the analysis under New Jersey's vascular standard may be somewhat complicated by the fact that the decedent worked primarily from home, the court's reasoning made no effort to distinguish her work-time activity levels from her leisure-time activity levels, as the standard

¹⁴⁸ McCluskey, *supra* note 88, at 798–99.

¹⁴⁹ N.J.S.A. § 34:15-7.2 (2017).

¹⁵⁰ *Renner v. AT&T*, 95 A.3d 201, 209 (N.J. 2014).

demands.¹⁵¹ Instead, it simply noted what she could have done differently before concluding, contrary to the conclusions reached by lower courts, that her husband's dependency claim failed to satisfy New Jersey's vascular standard. The court's rationale describes classic contributory negligence, which examines whether a tort plaintiff's own negligence was a causal factor in a harm she incurred.¹⁵²

If courts essentially begin to entertain contributory negligence, then what becomes of the "grand bargain" that workers' compensation was supposed to strike? Ultimately, if contributory negligence analyses are allowed to creep into claim analysis, the bargain becomes one-sided; claimants would only be able to seek the limited remedies the workers' compensation system allows, but employers would be able to shield themselves using contributory negligence.

a. Whose Burden Is Occupational Harm Anyway?

That the workers' compensation system does not currently address many of the harms a worker may incur from a sedentary workplace suggests that these types of harms are viewed as the result of individual choices rather than larger social forces.¹⁵³

But sedentary workplace harms do not simply evaporate because the workers' compensation system has not seen many claims. So where has the burden for these harms shifted? The obvious and likely answer would seem to be onto regular medical insurance. Assuming that is the case, employers would still bear at least part of the treatment burden, but any part not borne by the employer would necessarily be borne by the worker. Further, the Medicaid system may well be bearing the burden of sedentary workplace harms incurred by low-wage workers.

The financial gravity of shifting the burden cannot be overstated. Direct medical costs alone totaled roughly \$89 billion for coronary heart disease and \$36.7 billion for strokes in 2015; by 2035, those numbers are expected to rise to \$214.5 billion and \$94.3 billion, respectively.¹⁵⁴ In 2014, an estimated 5.7% of total costs associated with heart disease were paid out-of-pocket, while 27.1% of total costs were covered by private in-

¹⁵¹ *Id.* at 207 (noting that the vascular standard "require[s] proof that the strain of the work effort that allegedly precipitated the worker's disability or death from coronary disease was qualitatively more intense than the strain of the physical activity to which the worker was accustomed in his leisure time.") (quoting *Hellwig v. J.F. Rast & Co.*, 538 A.2d 1243, 1250 (N.J. 1988)).

¹⁵² RESTATEMENT (THIRD) OF TORTS § 3 cmt. b (2010).

¹⁵³ Wendy E. Parmet, *The Impact of Law on Coronary Heart Disease: Some Preliminary Observations on the Relationship of Law to "Normalized" Conditions*, 30 J. L. MED. & ETHICS 608, 609 (2002).

¹⁵⁴ OLGA KHAVJOU ET. AL., AM. HEART ASS., PROJECTIONS OF CARDIOVASCULAR DISEASE PREVALENCE AND COSTS: 2015–2035, at 3–13 (Nov. 2016).

surance and 7.2% by Medicaid.¹⁵⁵ It is important to reiterate that workers will still shoulder some of the burden for private insurance; on average, private sector workers contributed between 21.1% and 27.2% of total health insurance premiums. By shifting the costs of sedentary workplace harms onto regular medical insurance and Medicaid, employers are able to avoid a substantial portion of the costs associated with sedentary workplace harms. In addition to avoiding payment for direct medical costs, employers are likely able to avoid paying for virtually all of the indirect costs of sedentary workplace harms, like lost wages. The cost of indirect harms is substantial: in 2015, coronary heart disease generated \$98 billion in indirect costs, and strokes generated \$29.6 billion.¹⁵⁶ Given the nature of indirect harms, it is likely that those billions are coming out of the pockets of workers.

Allowing employers to shift the costs of sedentary workplace harms off of themselves undermines the bargain between workers and employers that the workers' compensation system is supposed to strike. When sedentary workplace harms are ignored by or excluded from workers' compensation coverage, workers incur substantial direct and indirect costs, while employers continue to enjoy the protection from tort actions that the workers' compensation system provides. Further, placing the burden for sedentary workplace harms on medical insurance undermines the core purpose of allocating the burden for workplace harms to employers: to treat them as a cost of production.¹⁵⁷ Treating workplace harms as costs of production functions on both the macro and micro levels. On the macro level, workers' compensation laws force specific industries to pass on the cost of industry's risk to workers—via increased workers' compensation insurance premiums—to consumers of its goods or services.¹⁵⁸ On the micro level, if an individual employer fails to provide adequate protection from workplace hazards, that employer would face higher insurance premiums, forcing them to bear the cost of failing to protect their individual employees.¹⁵⁹ Both of these effects incentivize adopting a workplace design and workplace policies that prevent employment-related harm by forcing industries and specific employers to bear the full weight of the harm they cause workers in the production of goods or the provision of services. Relieving employers of those costs re-

¹⁵⁵ Agency for Healthcare Research and Quality, *Table 4: Total Expenses and Percent Distribution for Selected Conditions by Source of Payment: United States, 2014*, U.S. DEP'T OF HEALTH & HUMAN SERV. (2014), https://meps.ahrq.gov/data_stats/quick_tables_results.jsp?component=1&subcomponent=0&tableSeries=2&year=1&SearchMethod=1&Action=Search.

¹⁵⁶ KHAVJOU, *supra* note 154, at 3–5.

¹⁵⁷ LARSON ET AL., *supra* note 95, at § 1.04.

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

moves the incentives to improve workplace design and policy that could prevent the harms that the modern sedentary workplace causes.

With the national healthcare debate continuing to rage and continuing public concern about rising health insurance premiums in the health insurance markets,¹⁶⁰ the actual impact of sedentary workplaces on medical insurance markets should be closely examined. With nearly half of Americans living with some form of cardiovascular disease,¹⁶¹ shifting the costs of harms associated with sedentary workplaces back onto employers and incentivizing the development of healthier workplaces could have a profound impact on premiums by fostering a healthier workforce, thereby reducing overall healthcare spending.

CONCLUSION

In many jurisdictions, it is entirely possible for workers to establish workers' compensation claims for harms incurred from their sedentary workplaces. Further study should be made into the policy implications of placing the burden for sedentary workplace harms on the workers' compensation system, and how it would compare to keeping it on medical insurance as it now likely largely stands.

It is also necessary to examine the impact of sedentary workplace claims and potential workplace design changes across other areas of employment law. For example, how would workplace design changes affect employers' obligations under the Americans with Disabilities Act?

Overall, however, and despite the further research necessary, the authors believe that it makes sense to allocate the harms caused by the sedentary workplace to the employer. Forcing the employer to incorporate the full cost of employment, including the cost of injury or disease precipitated by a workplace that is designed for sitting for the majority of the day, will incentivize employers to reflect upon and change their workplace design as necessary to decrease the likelihood of liability. In the end, the internalization of such negative externalities will lead to a more fair, healthy and productive workplace.

¹⁶⁰ Associated Press, *Why Health Care Eats More of Your Paycheck Every Year*, NBC NEWS (Nov. 4, 2016), <http://www.nbcnews.com/health/health-news/why-health-care-eats-more-your-paycheck-every-year-n678051>.

¹⁶¹ KHAVJOU, *supra* note 154, at 3–3.