

# OCCUPATIONAL HEALTH

## SPECIAL INTEREST GROUP

### President's Message

Lorena Pettet Payne, PT, MPA, OCS

The OHSIG would like to welcome new members. Watch for upcoming email and short podcasts regarding our specialty practice. You are always welcome to contribute by sending information about your practice, letting us know of speaking engagements with other related organizations, your willingness to be listed on a speaker's bureau, submitting an article for this section of the *Orthopaedic Physical Therapy Practice* magazine or joining a work group. If you would like to add to the work of the SIG, contact a Board member. Contact information is listed under special interest groups within the Orthopaedic Section website.

Something to think about: As a group, are we still referring to "work hardening" and "work conditioning?" The Advanced Work Rehabilitation guideline that can be found at the OHSIG website outlines updated language and construct for "work rehabilitation." The level of complexity (levels 1-4) guides decision making and planning by the physical therapist with the ultimate goal of a return to full duty work. I invite you to familiarize yourself with this information so that all stakeholders begin to define the process similarly.

# 24.1

## The Injured Worker

### COURSE DESCRIPTION



This course covers topics related to the roles, responsibilities, and opportunities for the physical therapist in providing services to industry.

Wellness, injury prevention, post-employment screening, functional capacity evaluation, and legal considerations are covered by experienced authors working in industry. Current information is also related to how the Affordable Care Act impacts physical therapy services.

**Additional Questions:**  
Call toll free 800/444-3982  
or visit our Web site at:

[www.orthopt.org/content/c/24\\_1\\_the\\_injured\\_worker](http://www.orthopt.org/content/c/24_1_the_injured_worker)

### Is Sitting Killing the American Work Force?

Bob Patterson, MPT, MBA, CAE

Sitting has become a way of life in modern America. The average American sits 13 hours per day; 86% of Americans sit all day at work. Two-thirds of those state that they find the prolonged sitting hard to tolerate.<sup>1</sup> No arguments exist anymore that combat the notion that we have become a sedentary population. This transition has largely been driven by the shift in American work from light and moderate manufacturing to seated office work. The Bureau of Labor Statistics (BLS) reports that there are over 21 million people in office and administrative support occupations, over 3 million in computer and mathematical occupations, over 6 million in business and financial occupations, over 6 million in management occupations, and over 9 million in transportation and material moving occupations. Of course these BLS statistics do not include people who are inactive in other industries such as architecture, engineering, sales, sciences, legal, and health care, to name a few. That is a lot of people sitting through their work day. Dr Stacy Clemes, Senior Lecturer in Human Biology, Loughborough University reveals that during waking hours 65% of an average person's day is sedentary. That equates to 9 to 10 hours per day for adults. Dr Clemes also discovered that if you tend to be more sedentary at work, you will also tend to be more sedentary at home. Her data shows that even on weekends, people still sit for 8 hours. Additionally, sedentary workers do not tend to compensate by increasing activity in their leisure time.<sup>2</sup>

Peering back through time, we have learned of the musculoskeletal hazards of sitting. Lumbar disk dysfunction, thoracic and cervical spine discomfort, and upper quarter disorders, to name a few, have all been associated at some point in time with overuse and static seated work postures. With the rise of the knowledge-based work force requiring the use of computers all day, these conditions have become increasingly prevalent to the point that it is now widely recognized and accepted that ergonomic remedies should be applied proactively to prevent common musculoskeletal disorders (MSD), manage risk factors, and speed recovery when those conditions develop.

As a reaction, occupational health professionals have seen a barrage of requests from physicians, employees, workers' compensation claimants, and clinical patients for sit/stand workstation adaptations. Research has shown that such modifications can help control musculoskeletal symptoms.<sup>1,3</sup> This trend has emerged as a direct result of health experts linking sitting to musculoskeletal health hazards. But a new data trend is emerging that links sitting not only to musculoskeletal conditions, but also to more severe metabolic health conditions, and even death. A Mayo Clinic endocrinologist, James Levine, recently stated that "A growing body of evidence that suggests chair living is lethal. Of concern is that for most people in the developed world, chair living is the norm...The chair is out to kill

us.” Anup Kanodia, a physician and researcher at the Center for Personalized Health Care at Ohio State University’s Wexner Medical Center, purports that “Sitting is the new smoking.” Never has the risk of sitting been more emphatically proclaimed than recently. The chair is out to kill us? Sitting is as hazardous as smoking? Is this hyperbole? How can a chair kill somebody or cause as much known harm as cigarette smoking? What should be the rationale for changing the work environment from sitting to a sit/stand, aside from the volumes of literature proclaiming the hazards of sitting and static positioning in developing musculoskeletal conditions? Surely these critics of the sitting posture cannot imply that sitting hazards extend beyond the musculoskeletal? Or are they?

This question has been explored in recent studies linking prolonged sitting to more diabolical health conditions such as diabetes, heart disease, and obesity. Recent research challenges the commonly held notion that those suffering from these metabolic conditions are more inclined to stasis because of their condition. Quite the contrary! Sitting is now circumstantially being blamed as a primary cause of these serious health conditions, particularly the root underlying source—obesity. Trend analyses reveal that the rise in prevalence of these health conditions follows an alarmingly similar trajectory to the rise in prevalence of sitting and sedentary activity levels while working. This suggests that work while sitting is actually causing these conditions, not the other way around.

What is being done to combat sitting as a driver of life-threatening metabolic conditions? The American Medical Association (AMA) has adopted a policy recognizing potential risks of prolonged sitting. The policy encourages employers, employees, and others to make alternatives to sitting, such as standing workstations and isometric balls, available. Dr Harris of the AMA states that, “Prolonged sitting, particularly in work setting, can cause health problems. And encouraging workplaces to offer employees alternatives to sitting all day will help to create a healthier workforce.” The recognition of sitting as a health hazard is not a notion dwelling in the shadows in health and wellness circles. Rather, research is now recognizing sitting as a mainstream health hazard requiring appropriate remedies.

Pennington Biomedical Research Center in Baton Rouge, LA, followed 17,000 Canadians over 12 years and found that those who sit for most of the day were 54% more likely to die of heart attacks than those who did not. In May and July 2010, two studies were published, which both found that sitting was positively correlated with adverse health outcomes, EVEN IN participants who exercised and met minimum daily activity guidelines. It was the first articulation that “too much sitting” is distinct from “too little exercise.”<sup>5,6</sup> In August 2011, Australian researchers succeeded in identifying reductions in life expectancy associated with each hour spent sitting and watching TV. They correlated every hour of TV watched after age 25 with a 22-minute reduction in life expectancy.<sup>7</sup>

We are still experiencing the initial wave of response to the emerging data in the workforce performance, wellness, ergonomic, and furniture industries. In fact, ergonomic and office furniture markets have responded reflexively with ever-multiplying alternatives to sitting—mostly toward the adoption of sit/stand workstations. This response is understandable. It stands to reason that if sitting is the problem, why not simply offer standing as an option? In fact, because the medical and

ergonomic communities were already trending toward the sit/stand work environment in an effort to address musculoskeletal conditions, the news that sitting causes more severe health problems only served to fuel the marketing machine in the ergonomic and office furniture industries. Dozens of new entrants to the sit/stand marketplace have emerged. In the past 5 years, the number and breadth of offerings for sit/stand options has increased several fold. Sit/stand options are now ubiquitous at trade shows and industry events. They were hardly noticeable only a few years ago.

The reaction of the marketplace to demand in this space is clear and purposeful. However, we are nowhere close to the peak of this trend. Pricing for sit/stand options has yet to respond to the increase in supply in the marketplace. Prices should decrease as the supply increases. However, costs remain high. If we apply fundamental economic theory (supply and demand), we must conclude that if pricing has not yet adjusted downward, demand relative to supply is still very high. As such, the prices of sit/stand workstations remains high. The trend surges onward.

This is all very good news for furniture and equipment manufacturers. High demand AND high prices—that is a recipe for profit-taking. But there is a problem on the horizon for the sit/stand furniture and equipment industry—simply changing the work environment from one in which the worker is statically positioned sitting to one in which the worker must endure a static standing posture—does not actually change the risk of deadly health conditions. In fact, in many ways, standing does very little to change that risk. Recent research is showing that static, prolonged standing is as hazardous to our health as sitting. Stationary standing is correlated with extremely high incidence of low back pain, even in participants who had no prior history of low back discomfort.<sup>8</sup> Additionally, people working in a fixed standing posture are at a significantly greater risk of cardiovascular disease, blood clots, etc, than those working in a fixed sitting posture.<sup>9-11</sup>

So what should be done? In order to answer this question, let’s look at the facts about how standing can might influence metabolic rates and induce Non-Exercise Activity Thermogenesis (NEAT). Sitting at a workstation all day is a sedentary activity. The Metabolic Equivalent (MET) is at about 1.5. Standing barely exceeds the MET rate of sitting and only barely surpasses the 2.0 MET threshold required for classification of standing as “light activity” from “sedentary.” Neither posture is beneficial from a MET or NEAT perspective. As discussed earlier, this is bad news for the American workforce.<sup>4</sup> We continue the trend toward “light” and “sedentary” work. As this continues, so will follow the adverse health conditions associated with it.

As physical therapists working in the clinical environment or in an industrial environment to help prevent and treat injuries and adverse health conditions, what can we do to cause a positive change in our patients’ and clients’ health risks? The flexibility of being able to alternate between sitting and standing, as afforded by sit/stand stations, is not necessarily the answer to the problem. Research shows that without proper training, the rate of adoption and the positive physical effects of an alternated sit/stand work posture post-implementation may not be sustainable. In order for sit/stand stations to be effective, the equipment must be provided along with specific training on use, a supportive management climate, and a participatory organizational culture. Without this people do not really use



the sit/stand features very much. They choose either sitting or standing and stick with it. They do not alternate. Sitting is usually replaced exclusively by standing when a sit/stand station is used. Sit/stand stations do not drive meaningful improvement in the total number of steps taken per day.<sup>12</sup> Also, self-reported comfort measures and symptoms sometimes improve with sit/stand stations, but more high quality research needs to be generated before we can make this conclusion. Regular movement appears to be the only remedy to halt and reverse the effects of prolonged stasis of sitting or standing.

Based on these facts, when we consider what physical therapists can do in the industrial environments in which we practice, physical therapists are uniquely suited to address the movement training and implementation practices that must be followed when addressing the hazards of static work through combined sit/stand work environments. Facilitating movement is in our collective DNA. Knowing that simply installing a sit/stand workstation is not the answer to all the woes of the modern sedentary workforce will help us address these issues as they arise in our respective practices.

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**STAND UP AND MOVE – movement programs centered on regular and frequent breaks will help. Here is a suggested movement program that delivers results:**

- Stand up & bounce around for a minute every 15 minutes AND
- Take a 5 minute walking rest break each hour AND
- Take a 10 minute brisk walk at lunch AND
- When watching TV, always MOVE during commercials or network breaks.

All of these steps will drive an increase of the overall MET rate by 3.74 METs from about 1.6 (the MET rate for static standing for 8 hours). These steps will also help to restore blood flow to working tissues, thereby reducing musculoskeletal strain.