

Active Design Strategies and the Evolution of the WELL Building Standard™

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Consistent evidence demonstrates the benefits of regular physical activity to population health and well-being, yet approximately 25% of adults worldwide do not meet the minimum recommended levels of moderate- to vigorous-intensity physical activity (MVPA; 150 min/wk).¹ Moreover, many people living in the United States spend up to 70% of their day in sitting or reclining positions.² Increased sedentary time has become especially prevalent in the workplace, as occupational physical activity has demonstrated a decreasing trend over the last several decades.³ Although the physiological mechanisms underlying the increased risks associated with sedentary behaviors are not well established, sedentary behavior is thought to have unique health implications and is considered a distinct concept from physical inactivity.⁴⁻⁶ Because of the growing literature on the myriad health risks associated with sedentary behavior, the public health relevance of promoting sufficient levels of physical activity while also limiting sedentary time is considerable.⁷ As adults spend about 90% of the day inside buildings,⁸ active building design and operations strategies present an innovative opportunity to address these modifiable behaviors. Although there are many active design and operations strategies available for office buildings, there has been little guidance on which strategies to prioritize when it comes to occupant health and well-being. Therefore, the authors conducted an analysis of the literature regarding active design and operations strategies in the workplace and compared the findings of this study with a prominent program called the WELL Building Standard™ (WELL™) to further inform office building projects as to which strategies to prioritize based on potential and demonstrated impact on health.

The WELL Building Standard

The WELL Building Standard, which was launched by the International WELL Building Institute™ in 2014, is a performance-based rating system for measuring, certifying, and monitoring features of buildings and communities that impact health. WELL addresses 10 topic areas (concepts) of the built environment: air, water, nourishment, light, movement, sound, thermal comfort, materials, mind, and community. The movement concept strives to integrate physical activity into the everyday life of the occupant and discourages sedentary time through the design and operations of buildings. For example, WELL encourages projects to incorporate open, accessible, and aesthetically designed stairs, provides physical activity incentives and fitness programming for employees,

integrates exterior active design elements and physical activity spaces, provides on-site fitness equipment, supports active transportation through amenities and other incentives, and provides active furnishings and ergonomic support.

In 2018, the International WELL Building Institute™ released the WELL v2™ pilot, the most recent version of its pioneering WELL Building Standard. WELL v2 reflects the updated evidence regarding effective, health-promoting building strategies. The fundamental components of WELL are *features*, which are comprised of building performance-, design-, and policy-based strategies and are categorized as either preconditions (mandatory) or optimizations (optional). Whereas in the original WELL Building Standard (WELL v1) optimization *features* were equally weighted in a project's overall score as 1 point (regardless of potential health impact), optimization *features* in WELL v2 are assigned graded point values based on their potential health impact. In theory, *features* with a higher point value in WELL v2 will motivate building project teams to pursue the healthiest strategies possible. This commentary provides additional guidance for building projects that are using the WELL Building Standard regarding which active design and operations strategies have the greatest potential impact on health outcomes.

Prioritizing Active Design and Operations Strategies

After examining the effectiveness of active design and operations strategies in increasing levels of physical activity, reducing sedentary behaviors, and improving health and well-being in indoor environments, the literature thus far appears to favor those strategies and policies that (1) encourage active transportation during the site selection^{9,10} and during the building design and operations phases;¹¹⁻¹³ (2) promote movement through the spatial layout^{14,15} of the building and through active workstations;^{16,17} and (3) provide flextime^{18,19} and onsite facilities^{20,21} for regular physical activity. To examine the potential health impact of such strategies, the authors categorized existing active design strategies according to their ability to increase MVPA (≥ 4.5 METs), light-intensity physical activity (2–3 METs), or to reduce sedentary time (1–2 METs). The findings of this study indicated that recommended levels of MVPA have the greatest potential to increase energy expenditure, improve health, and reduce mortality risk.^{22,23} Thus, the authors encourage building projects to prioritize design strategies that, first and foremost, promote MVPA and increase the number of occupants meeting the recommended levels of 150 to 300 minutes per week. Examples of such optimization *features* in WELL v2 include on-site structured exercise classes, dedicated exercise rooms with equipment, centralized staircases, the selection of walkable and bikeable building sites, and bicycle storage rooms and showers to encourage uptake of active transportation.

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Building projects should also consider implementing work site design and policies that limit car parking spaces because doing so can augment building design features intended to encourage active commuting. In addition, research regarding strategies to limit car parking can inform and expand optimization strategies in future versions of WELL.

Although replacing sedentary time with MVPA offers greater potential health benefits,² physical activity at this intensity is likely not sustainable throughout the workday. This may be especially true for the 25% of adults who struggle to meet even the minimum physical activity recommendations.¹ Therefore, building strategies striving to replace sedentary behavior with light-intensity physical activity become especially important, realistic targets for population-level health outcomes. Light-intensity activities can contribute markedly to overall physical activity levels while reducing sedentary time and are effective in lowering the risk of all-cause mortality, cardiovascular disease incidence and mortality, and type 2 diabetes.⁷ In fact, simply interrupting sedentary behaviors with repeated bouts of light-intensity activity appears to have positive effects on cardiometabolic health and on mobility.^{24,25} Therefore, while strategies that promote adequate MVPA should take priority with regard to *potential* health impact, features that encourage the provision of dynamic workstations (eg, treadmill desks) and promote leisurely movement in the interior and exterior spaces of the building should be a close secondary priority for building projects, especially when considering the impact on metabolic health for inactive populations.

Notably, some active design strategies may intend to reduce sitting time without increasing physical activity markedly. For example, sit–stand desks may lead to slight increases in energy expenditure resulting from standing or fidgeting; however, the intensity of such activity usually does not exceed 2.0 METs. Nonetheless, standing and fidgeting do have health advantages over prolonged sitting even though they have a lower impact on cardiorespiratory fitness and energy expenditure compared with strategies that encourage more movement.² The authors recommend that building projects distinguish sit–stand workstations as an active design strategy separate from dynamic workstations and give the lowest priority to those strategies that reduce sitting time without increasing physical activity (eg, sit–stand desks). Further, research regarding the relative health impact from sit–stand compared with more dynamic workstations can inform respective point assignments in future iterations of WELL.

Given that the concept of “Move More/Sit Less” has moved to the forefront of the public health agenda, movement (preferably of greater intensity) throughout buildings and building sites should be a priority in the design and operations of such. WELL v2 certainly echoes this sentiment regarding the importance of movement throughout the day, because it requires projects to pursue active design strategies within the building and the site surrounding the building. The current analysis informs building projects on how to prioritize active design and operations strategies while also providing a deeper understanding of the relative health benefits of strategies in the movement concept of WELL v2. This in-depth commentary can also be used to inform future versions of WELL and encourage projects to pursue effective, health-enhancing strategies for building occupants. Although the analysis of this study focused on workplace strategies, future analyses should examine the potential health impact and demonstrated effectiveness of active building design and operations strategies for schools, airports, and other buildings in which people spend large portions of their day.

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