

Physical Activity in the Workplace: A Practical Solution for the Sedentary Lifestyle Epidemic?

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I. Introduction:

Over the years exercise and medical research has increasingly pointed to the notion that “sitting is the new smoking” as the epidemic of sedentary lifestyle associated diseases such as cardiovascular disease and Type II diabetes continues to claim thousands of lives per year (1). In fact, in 2016 it was estimated in the US that obesity impacted 40% of adults and is the cause of an average of 112,000 preventable deaths per year. Since the average American employee spends almost 8 hours a day at work and less than 20% of jobs have moderate-to-vigorous physical activity demands, it seems this steady increase toward sedentary behavior at the workplace should be held partly responsible for these disease trends (2). However, rather than considering the workplace as a barrier, it should be viewed as a significant opportunity to implement a societal shift in health promotion and regular physical activity. In order to explore the potential impact of workplace physical activity further and offer tangible insights, this article discusses the prospective benefits of physical activity at both an individual and organizational level and analyzes the successes and weaknesses of past physical activity interventions. Then, based on these findings, it offers a glimpse toward the future of physical activity in the workplace and even more importantly, practical suggestions for employers and employees alike to consider implementing in their respective work environments.

II. The Importance of Physical Activity in the Workplace

From a bird’s eye view, the benefits of physical activity in the workplace seem to have a ripple-like effect starting in the center with the individual employee health and working outward to produce organizational changes. Increases in weekly physical activity (PA) in sedentary individuals leads to improvement in health outcomes especially in reduction of noncommunicable diseases and cardiovascular disease risk factors including obesity, Type II diabetes and hypertension among others (1). Specifically, a research review of 15 randomized controlled trials testing exercise interventions in the workplace found improvements in cardiorespiratory fitness (CRF) in office and computer workers and health-care and construction workers. CRF is a major predictor of cardiometabolic diseases, therefore, workplace exercise

interventions have important health-enhancing and preventative implications for both manual laborers and desk-workers (3).

In another realm of employee health, workplace PA may be a solution for general musculoskeletal pain especially in the neck and shoulders which often stems from job-related stressors. Of note, workplace exercise resulted in improvements in neck pain in office and computer workers, dentists, industrial technicians, health-care workers and fighter pilots (3). Similarly, a meta-analysis of 12 workplace PA programs showed a consistent reduction in neck and shoulder pain among employees in the exercise groups. Specifically, these workplace exercise programs performed during the workday included light resistance exercise, individualized training protocols and strength, endurance, co-ordination and aerobic training (4). These reviews show promising ramifications for employee well-being and overall-health when PA is performed in the workplace especially since complaints of muscular injury and discomfort is common across many job settings.

Furthermore, workplace PA may have positive implications for employee mental health. A review of 17 workplace PA programs found that general PA significantly reduced feelings of depression while yoga interventions were related with significant improvements in anxiety (5). Additionally, a study focusing on workplace exercise programs for nurses found significant improvements in symptoms of depression following a 12-week supervised exercise protocol (6). Therefore, these findings seem to suggest that workplace PA benefits could extend beyond solely physical impacts to improve psychological well-being as well.

Naturally, increases in employee health especially reductions in common disease risk factors, musculoskeletal complaints and mental stressors extend into workplace benefits related with increased productivity, reduction in injuries and lower overall medical care costs (7). Previous researchers have demonstrated that workplace PA interventions were often responsible for improvements in the social atmosphere of the office creating a satisfactory work experience and environment that enables employees to perform at their best (8). In short, when employees are empowered to perform at their highest capability the organization as whole is likely to experience increased success as a result. Therefore, its not surprising that workplace PA is associated with increased productivity and company performance (7). Specifically, decreases in neck and shoulder pain, increases in muscular strength particularly of the core and improvements in BMI were associated with increased productivity among health care employees (3).

Additionally, workplace PA may be a key factor in improving workplace morale specifically by building a workplace culture of health, boosting the corporate image, increasing co-worker communication and retaining talented employees (7). Therefore, it seems to ultimately behoove employers to adopt PA programs as part of the company operations viewing it as an investment in the health and satisfaction of their employees.

III. Weaknesses of Past Workplace Exercise Interventions/ Barriers

To begin with, it is often helpful to consider the shortcomings of the past workplace exercise interventions as well as the proposed barriers to their success to modify programs to avoid these pitfalls. According to a review of PA in the workplace on physical fitness, many of the interventions disregarded demographic differences of the employee especially gender and age. This resulted in programs that were not successful for all age groups or genders and may have reduced the potential benefits had they been tailored to the specific physiological characteristics of the employees. The review also noted that it was difficult to pinpoint specific exercise modalities as being superior to others as consistent predictors of the PA effects on cardiorespiratory fitness, making practical recommendations ambiguous (9). There may also be problems with workplace PA being able to produce some of the expected health outcomes. Specifically, a review on the impact of workplace PA interventions on musculoskeletal pain found that few study protocols had consistent results for the improvement of arm, elbow, wrist, hand and finger pain (4). These deficiencies display a need for future research and further modifications to workplace exercise interventions.

Current research is, however, effective in demonstrating that workplace culture is one of the most cited barriers to the success of PA programs in the workplace (8; 7). Examples of detrimental cultural attitudes include the absence of employer endorsement, co-worker judgement, pressure to always be working as well as a perceived conflict of interest when trying to communicate difficulties of a heavy workload to an employer (8). Other various frequent barriers to note include a lack of individual familiarity and confidence with exercise, work-related exhaustion, inadequate time or flexibility in a work-day and inconvenience of interruptions (7; 6; 10; 8). Nevertheless, discussion of these roadblocks present in past interventions are not intended to discourage but rather to reveal weak points that offer an opportunity for modification especially through testing new methods in future research.

IV. Strengths of Past Workplace Exercise Interventions

It is evident that not all workplace PA interventions are inherently successful in producing the desired health benefits, therefore, it is important to pinpoint the common characteristics or trends that enabled past workplace interventions to achieve successful outcomes. As with many changes in the workplace, a good place to begin is to evaluate the attitudes of the organization as well as those of corporate leadership. Studies have found that exercise programs are more effective when they are included as part of the business framework and ideals and when they are given practical organized structure as component of the normal workweek (7). Obviously, this functions best when in concert with the involvement and support of the employer who often sets the tone for the acceptable attitudes and behaviors of employees (8).

Finally, successful program trends implemented at the organizational level often share a common practice of leveraging the social and environmental components of the workplace. In the social sphere, this includes the adoption of group components into the PA programs. A review of the common motivations and barriers to physical exercise, found that social interaction as part of the workplace interventions was a vital factor in individual program adherence (8). In terms of workplace environment, creative modifications to work-stations and job facility features show promising results for practical decrements in daily sedentary behavior. Workstations that have been found to have the greatest potential benefits include the sit-to-stand, treadmill and stationary raised desks. Work-building changes that have seen the most consistent successful study results revolve around office stair design with increased accessibility, convenience and motivational art or signs being noted as effective options (2).

For practical application, it is critical to explore effective evidence-based trends of workplace exercise program design. Personalization in workplace interventions has auspicious implications for program efficiency and job-specific benefits. This is put on display in a review in which the program design of intelligent physical exercise training (IPET) is successfully employed in various research studies. This IPET is formulated based on a baseline assessment of an individual's health condition, physical ability level and work needs. Specifically, the evaluation includes physiological assessments in relation to the employee's competency in the categories of aerobic, strength and functional fitness. If the employee was found to be under set cut-points for these physiological measurements then the corresponding training was added to their workplace exercise program. Therefore, this allowed programs to focus on the primary needs and deficiencies of the individual making them more efficient in filling gaps in health and addressing

possible impacts of the specific occupation on the body. Additionally, across several studies and reviews, it was noted that the groups which were regularly overseen by an exercise professional such as physical therapist or exercise physiologist had largely more successful outcomes than those with self-administered and self-taught programs (3; 6). Such results are likely due to the input of the exercise professional on program variables and progression, proper exercise form and their influence on intervention adherence (6).

Lastly, the exercise program variables of frequency, intensity, time and type will be explored based on their involvement in various successful interventions, and though there is not sufficient evidence to draw any fixed conclusions they may provide helpful program starting points. For frequency and time, a review suggests that workplace PA is more effective when conducted for at least 17-20 weeks and have recommended that the individual exercise sessions be performed for about 20 minutes 2 to 3 times during the work week (9; 8; 3). These short exercise increments are suggested because they are often easier to fit into a work schedule (8; 3).

Regarding intensity, a moderate to vigorous approach is often recommended because it allows for target workout outcomes to be achieved in a shorter amount of time, thus increasing its efficiency which is vital for any work environment in which time often equates with money (3).

Finally, type does vary somewhat between studies though generally aerobic and resistance training programs appear to be successful especially in group settings while one review does also show some promising implications for the addition of yoga sessions (5).

V. The Future of Physical Activity in the Workplace

It is the hope that future strides in PA interventions in the workplace will be able to build on the successes of past interventions and find innovative solutions to overcome the common barriers that are presented. A brief glimpse towards tomorrow shows potential for development in the design of office workspaces, further personalization and efficiency of exercise protocols, and integration of current technology.

Researchers have suggested that urban planning especially workspaces and the environments around them should be conceived with evidence-based research in mind to augment a societal shift towards a healthy, active lifestyle (1). For example, this may include considerations of transit from housing developments to job sites; specifically the accessibility and effectiveness of walking or bike paths to and from work spaces. It has also been proposed that office buildings themselves could be devised to leverage or address the individual and group motivations for PA

considering both personal and communal exercise options. Ideally, these modifications would create an environment that intertwines productivity and healthy lifestyle adopting a more holistic approach that champions the social, physical and occupational flourishing of each individual (2). It is anticipated that future workplace PA interventions will become increasingly tailored to the needs and stresses of the job (9). At the same time, it is evident that successful time management is valued across most occupational formats; therefore, exercise that is time-efficient such as high intensity interval training may continue to grow in prominence but more research is needed to determine the extent of its effects especially its ramifications for musculoskeletal complaints (8). Finally, as exercise technology continues to rapidly develop, it seems that that new communication and information innovations could be employed to increase the accessibility and convenience of PA interventions for both employees and employers. Fitness bands and apps can be used to increase intervention adherence and motivation through reminders and activity tracking as well as provide instruction on workouts to increase likelihood of properly completing the exercises (3).

VI. Practical Suggestions for Employees and Employers

A thorough summary of workplace exercise intervention research was conducted above with the intention of drawing out a few key practical steps for both employees and employers to take toward increasing PA in their job setting. Employees can reduce their sedentary behavior by requesting sit-to-stand desks or treadmill workstations and taking advantage of the work environment including taking the stairs instead of the elevator (2; 9). Additionally, they can advocate for workplace health promotion by helping to organize and implement exercise interventions that are achievable for a typical work-week (8). Such suggestions and feedback are key for development of a successful program especially in terms of increasing adherence, adaptation to job specific needs and future modifications.

Employers have a key role in the effective implementation of physical activity protocols as their support legitimizes its importance as part of the workplace culture and they are responsible for modifications in work expectations to make participation feasible (8). At the individual level, employers can encourage employee involvement through offering incentives, counseling and implementing regular PA breaks in the daily routine. At the same time, employers should also take advantage of the social draw of exercise by organizing community exercise opportunities such as walking groups or group physical activity breaks. Additional efforts could include a

company-wide health assessment including a PA appraisal that educates employees on health risks and the benefits of daily exercise and modifications to the work environment that would encourage more daily activity (9).

Specific suggestions for employers in regards to exercise program design center around personalization of the protocols to account for individual needs and deficiencies, occupational demands, demographics and health and mental status (9; 5). The IPET protocol may be a helpful launching point for this sort of personalized approach. Furthermore, it is recommended that exercise specialist such as exercise physiologist or physical therapist be consulted for individualized assessments, for guidance in the design process and to provide initial exercise instruction or supervision for employees (3). In general, as far exercise program frequency and type, several studies suggest that shorter, vigorous sessions (20 minutes) several times a week should be recommended to employees as it is more convenient for work schedule and time-effective (8; 3). In addition, as with other business strategies, a program evaluation system should be put in place to assess whether the intervention is achieving its intended outcomes on both the individual and organizational levels (9).

Finally, employers can support intervention adherence by regularly participating in the exercise protocol as it indicates the importance and acceptability of the activity and sets the tone for a culture of workplace health promotion (8; 3). Another practical step to aid in adherence is to increase the flexibility of employee's schedule or allow for exercise time in weekly work schedule to improve employee's ability to take part in PA protocols during a work-day (8).

V. Conclusion:

Undoubtedly, workplace PA interventions have the potential to reduce the risk factors of sedentary behavior and increase cardiorespiratory and muscular fitness. These health benefits often transcend into enhanced work performance resulting in greater company productivity outcomes. Based on the findings of the current review, workplace exercise interventions should be personalized to the deficiencies of the employee, involve exercise professionals in program design and implementation and leverage the influence of the social environment of the workplace. The future of workplace exercise interventions shows an increasing push towards time effective exercise interventions such as HIIT and promising migration towards the integration of new technology.

Additional Elements

1) Apply It

1. Advocate for reductions in daily sedentary behavior at workplace by requesting sit-to-stand desks or treadmill workstations
2. Workplace exercise programs should be designed for short 20-30 minute blocks of time throughout a work-week
3. Exercise protocols should be formatted to take advantage of group and individual spaces at the workplace
4. Effective exercise interventions are personalized to employee's health and occupational needs and demographics

2) Bridging the Gap

Increasing daily physical activity through workplace specific exercise interventions has the potential to result in many positive health and workplace outcomes including increases in cardiorespiratory fitness and employee productivity and decrements in musculoskeletal injuries and healthcare costs. In order to achieve these benefits, exercise protocols should be time effective, personalized and take advantage of workplace settings and group interactions. To be applicable and successful in the future, these interventions may necessitate increasing individualization, urban involvement and integration of technology. Currently, it is recommended that employees be active advocates for implementation of effective exercise programs and employers foster a supportive work culture.

3) Summary Statement

The rampant epidemic of cardiovascular disease and diabetes is often associated with a sedentary lifestyle and demands practical solutions that can be implemented into the average daily schedule. Since the average American spends 8 hours a day at work, implementation of effective and time-efficient exercise interventions at the workplace could be a crucial step in halting this national health crisis while simultaneously increasing workplace productivity.

4) Pulled text

“Since the average American employee spends almost 8 hours a day at work and less than 20% of jobs have moderate-to-vigorous physical activity demands, it seems this steady increase toward sedentary behavior at the workplace should be held partly responsible for these disease trends (2). However, rather than considering the workplace as a barrier, it should be viewed as a

significant opportunity to implement a societal shift in health promotion and regular physical activity.”

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