

# Impact of Physical Activity-Based Workplace Wellness Programs on Improving Worker Productivity and Health

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Inappropriate lifestyles are present in work environments that are significant challenges to the health and well-being of workers, especially in office environments. The review aims to comprehensively identify and analyze the effect of WPPAs (physical activity-based workplace wellness programs) on employee productivity and health and to provide information to organizations on the importance, benefits, and possible implementation strategies. A total of 321 original open access articles were identified from the SCOPUS database and 25 publications met the inclusion criteria. The (PICOC) strategy was used to define the eligibility criteria. The findings showed positive effects of physical activity on cardiovascular health, muscle strength, and work productivity. Each type of physical exercise could not be analyzed in depth because of their differences in terms of methodologies or population and since the research did not seek to evaluate the characteristics of these exercises, economic comparison of the investment was not performed as few sources offered such information. Although WPPAs hold promise for improving health and productivity at work, greater standardization is required in identifying the characteristics of physical activity, monitoring and understanding its long-term impacts to maximize its effectiveness and sustainability.

## 1. Introduction

In today's work environment, the health and well-being of workers are affected by situations such as: work overload, the lack of ergonomics in workplace design, psychosocial problems, as well as deficiencies in the occupational safety system. Added to this is a workload that lacks physical activity. Sedentary behavior of workers, characterized by insufficient energy expenditure with values below 1.5 MET is the constant; especially in those who work in offices (van der Ploeg and Hillsdon, 2017). This is associated with various chronic diseases such as cardiovascular disease, obesity, type II diabetes, cancer and dementia (Homer et al., 2019). and (Biswas et al., 2015). Results from various studies suggest that a workday that involves sitting for more than 7 - 8 hours per day is reflected in increases in the mortality rate attributable to cardiovascular conditions (Ekelund et al., 2016).

In the European Union, a public opinion survey pointed out that white-collar workers sit more than 7.5 hours per day (Loyen et al., 2016) and the US Physical Activity Guidelines Committee established a direct association between sedentary lifestyles and increased mortality risk due to type 2 diabetes and cardiovascular diseases (Katzmarzyk et al., 2019). On the other hand, several studies related to occupational context diseases point out among the main risk factors musculoskeletal disorders (MSDs) (Ardahan et al., 2016). Moreover, as pointed out by (Borle et al., 2021) long periods of sedentary or inactivity are associated with MSDs being the most frequent reason for days of incapacity at work (Bauer et al., 2016).

On the other hand, the report on work absenteeism in Germany (Badura et al., 2018), points out that MSDs remain the second most frequent reason for absences from work absenteeism and work incapacity reports and, the World Health Organization (WHO), estimates that approximately 1.71 billion people worldwide are affected by MSDs with low back pain being the most prevalent (Cieza et al., 2021). To that extent, promoting physical activity or reducing sitting times of more than 30 minutes in their work activities helps to reduce these potential health risks. The WHO recommends 150 minutes or more of moderate-intensity aerobic physical activity, or 75 minutes of vigorous aerobic physical activity or a combination of both per week. Thus, an adult person can be

considered physically active if he or she has between 150 to 300 minutes of physical activity per week (Bull et al., 2020). This contributes to combating sedentary lifestyles in the workplace, better occupational health and increases productivity. Therefore, there is a need for quality studies that collect concrete evidence of the long-term effects of workplace interventions aimed at reducing the time of the working day in which employees remain seated (Commissaris et al., 2016) and (Martin et al., 2015). Unfortunately, almost 31.1% of adults in the world do not develop between 150 to 300 minutes of physical activity per week and their workday is sedentary so they are considered as physically inactive (Hallal et al., 2012).

Workplace wellness programs (WWP) have generally been directed to individual initiatives around nutrition, physical activity (PA) and smoking control (Roemer, 2020); however, the Total Worker Health® strategy is a more integrated approach as it takes into consideration a variety of factors; among these, environmental and leadership, health and psychosocial factors seeking to integrate occupational safety and health protection through its promotion in order to prevent injury and illness to workers by improving their health and well-being. It is thus evident the need for wellness programs based on physical activity as an essential intervention to improve motivation and physical performance, reduce absenteeism due to health problems and minimize costs (Watanabe et al., 2018).

The Systematic Literature Review (SLR), as an academic article, includes findings that are theoretical and methodological contributions to a particular topic (Albhirat et al., 2024). The SLR conducted analyzed the research developed on the effects of physical activity-based wellness programs (WPPAs) on the productivity and health of workers, having proposed the following research question: What physical activity-based work wellness programs contribute to improve productivity and impact on the wellbeing and health of office workers? The justification for working on this topic was to have a better understanding of the impact of wellness programs based on physical activity in office workers with the intention of promoting the application of wellness and risk prevention programs in different industrial sectors to ensure healthy work teams and safe conditions. Considering that in safety and health issues the essential thing is to safeguard the life and health of the worker avoiding any possible damage to the organization (Gracia et al., 2022). The review of the research carried out included those published between the years 2014 - 2024. The methodological design took as a reference the general scheme of systematic reviews. The results gather the information from the publications coming from databases. Finally, the conclusions of the review are detailed.

## 2. Methodology

### 2.1 Systematic search strategy

The search strategy using the PICO question helped to define more precisely the key elements of the research question and the procedures for obtaining the information needed to search for relevant scientific literature in databases such as Scopus on the impact of physical activity-based workplace wellness programs on office workers.

Table 1: PICOC

	Component	Help Question	Key words	
P	Problem/ Population	Decrease in office workers' health and well-being	What is the situation regarding the health and welfare of office workers?	"occupational health", "wellness", "white collar workers", "office workers".
I	Intervention	Workplace wellness programs based on physical activity	What actions can be proposed to improve the well-being and health of office workers?	"WPPAs", "workplace wellness program", "wellness program", "health promotion", "wellbeing", "physical activity".
O	Results	Improvements in the well-being and health of office workers	How will achievements in office workers' wellness and health be measured?	"Program Evaluation", "Health Program", "Health Behavior".
C	Context	In the office sector	In what type of organization/circumstance?	"Workplace", "white collar workers" "Administrative Offices".

Based on the keywords in Table 1, search options were elaborated using the following equation as references: : ("Occupational Health" OR "wellness" OR "white collar workers" OR "office workers") AND ("WPPAs" OR "workplace wellness program" OR "Health promotion") AND ("Wellbeing" OR "physical activity" OR "Wastewater treatment" OR "Program Evaluation") AND ("Health Program" OR "Health Behavior" OR "Work place") AND ("white collar workers" OR "Administrative Offices")

The documents collected were analyzed following the PRISMA methodology, being the inclusion and exclusion criteria those linked to the research question. As inclusion criteria, relevant articles on work wellness programs based on physical activity with impact on productivity and health of workers in administrative areas of organizations were considered. Case studies were considered. As exclusion criteria, articles that were outside the established analysis time period and that were not related to the research topic were not considered. The attached chart shows the details of the PRISMA methodology.

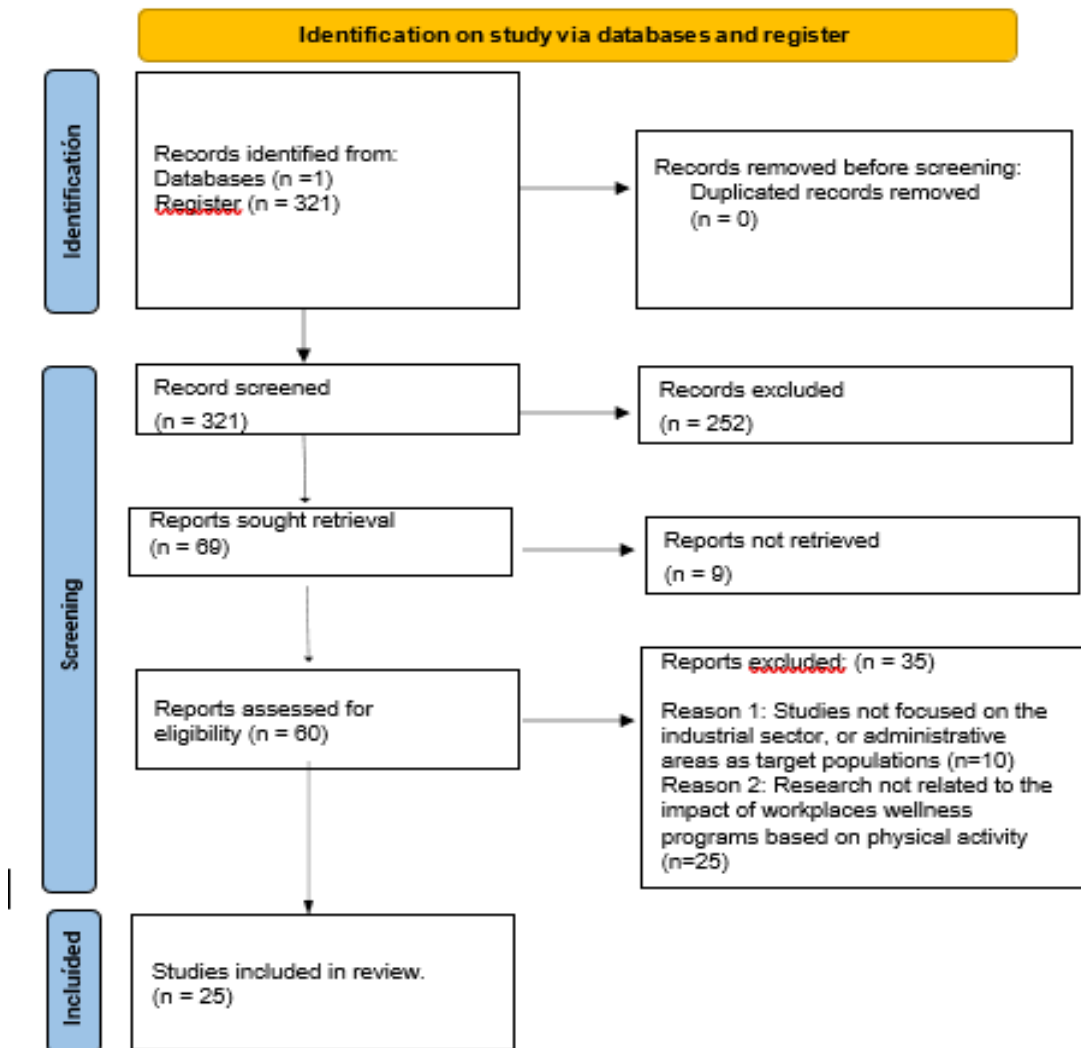


Figure 1: Prism model for identifying eligible RSL documents

Initially, 321 documents were identified. Based on a review of the title, abstract and key words, we analyzed whether the articles identified complied with the SLR subject matter. From the initial number, 252 documents were excluded. A second analysis made it possible to identify how many could be retrieved as full text. Sixty-nine articles were obtained. A subsequent analysis identified 60 eligible documents; finally, after leaving aside 35 documents according to the inclusion and exclusion criteria, 25 publications were obtained, which were part of the systematic literature review (SLR) carried out. The bibliometric analysis made it possible to address sources that influence and provide information and data on the impact of labor welfare programs on productivity and health.

### 3. Results and discussion

(Villanueva et al., 2020) evaluated the effect of a 6-week exercise program to reduce trapezius muscle tone and musculoskeletal (MSD) discomfort in office workers; although these discomforts are constant during the workday, they can be improved by a specific 6-week training program. (Lutz et al., 2020) made a critical evaluation and synthesis of health economic evaluations (HEE) of workplace interventions to increase physical activity (PA) and/or decrease sedentary behavior (SB) and although physical activity can attenuate or even eliminate the detrimental influence of sedentary behavior on health, these require individual management and both aspects must be addressed. Reducing sedentary behavior by increasing physical activity may increase the effectiveness of interventions; however, the cost impact and economic evidence on productivity improvement by these interventions is not yet clear. They are most likely to be cost-effective in the long term because of a better understanding of the costs and economic benefits they generate.

The work of (Castiblanco et al., 2020) specifies that the risks are associated with inadequate positions, monotonous tasks and repetitive movements, to that extent as a result of identifying these types of postures it is recommended to warm up and stretch during the workday, as well as take a break and perform other activities that help to relax the body.

The research by (Gracia et al., 2022) on workers in the metal mechanic sector specifies that, as part of the implementation of a Health and Safety Management System, the Improvement Plan developed incorporated active breaks programs and can be of help when executing these programs. They suggest considering the use of anti-stress balls, since workers in certain work areas remain in the same posture for a long time and must perform repetitive movements.

With respect to occupational health, it has been identified that poor health reduces work capacity by drastically affecting wages, hours worked, workforce participation, turnover, retirement and occupational choice. Other research claims that employees without diagnosed problems could improve their health by modifying their lifestyle in areas such as diet, exercise and sleep. This research relates to productivity at work through resilience-based capabilities, energy, and mood (Albarrán and Demichela, 2023).

On the other hand, the analysis of physical activity programs provides a deeper understanding of the effectiveness of these programs by offering concrete and relevant information on how they can influence health and performance in the work environment. Thus, alternative approaches to physical activity programs in work settings appear to be linked to improvements in health, and resistance training has been shown to offer superior benefits compared to other interventions (Todorovic et al., 2020).

Significant improvements in employee health and productivity have been demonstrated, evidenced by increases in cardiorespiratory fitness, muscle strength and workability. This impact is critical to well-being and job performance. Some programs, such as W@W-App, have been found to influence sedentary patterns outside of work hours, indicating an impact beyond the immediate work environment. This translational effect may be crucial for the overall health of employees. However, these findings did not show a decrease in occupational sitting time, but did lead to changes in work routines, with more flexibility in performing their activities (Bort-Roig et al., 2020).

The review highlights the need for clear standards in measurement tools to more effectively evaluate the results of these interventions. The variability in the methodology of the studies reviewed makes it difficult to establish which specific exercise modality or intervention is most effective. In some programs the absence of analyses of post-intervention worker adherence and autonomy may limit the full understanding of the long-term effects and practical application of the programs. Different physical activity and health programs and approaches, such as yoga, targeted exercise programs and mobile apps, show positive results. These programs appear to improve physical measures, such as waist circumference, blood pressure, muscle strength and cardiorespiratory fitness, as well as work productivity and workability of employees. Some programs, such as UPnGO, have been shown to be scalable and had a positive impact on increasing daily physical activity. The findings suggest that these programs may be especially beneficial for manual workers or those in small work environments, indicating the possibility of tailoring specific interventions based on the type of work population (Lau and Faulkner, 2019).

According to (Todorovic et al., 2020), having a wide variety of work interventions could be counterproductive if aspects prior to the beginning of these activities are not considered, such as: the determined space, personnel to lead the exercises and to follow up the program at all times.

### 4. Conclusions

Workplace intervention programs focused on physical activity, health and worker productivity show significant potential to improve employee well-being. These range from yoga sessions to mobile apps and specific exercise programs, demonstrating positive impact on cardiovascular health, muscle strength and work productivity. While

they prove to have positive effects, there are also some challenges in their implementation, monitoring and adaptation that need to be addressed to maximize their impact and long-term sustainability.

The lack of standardized measurements and the absence of detailed follow-up and analysis of worker adherence and autonomy after interventions are important limitations in fully understanding the long-term effects and practical applicability of these programs.

Several studies point to both internal and external constraints that affect the effective implementation of these interventions. Intrapersonal motivation, socialization, work environment, economic aspects and time can interfere with employee participation and enthusiasm. Some work interventions may be counterproductive without the background knowledge to conduct the exercises and to monitor the program on an ongoing basis. Finally, the economic analysis of WPPA programs is a topic still to be investigated and is an aspect that has not yet been explored in depth.

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