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The Impact of a 12-Week Workplace Physical Activity Program on the Quality of Life of Sedentary Workers: A Pilot Study

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Abstract: Office workers frequently display behavioral patterns marked by extended periods of sedentary and seated work. In this context, the implementation of a workplace exercise program has been shown to be effective in mitigating health-related risk factors. This study aimed to evaluate the impact of a 12-week workplace exercise program on the quality of life of employees whose primary occupational duties involve prolonged sitting. The final sample comprised 19 participants (6 females and 13 males), aged between 21 and 48 years (M = 32.26; SD = 9.03). Among these participants, 78.9% reported engaging in a hybrid work arrangement, 15.8% followed an on-site work regimen, and 5.3% worked remotely. Furthermore, 84.2% of participants reported sitting for 6 to 8 h per day, while 15.8% reported sitting for between 9 and 12 h daily. The quality of life of participants was assessed using the Medical Outcomes Study 36-Item Short Form Health Survey. A paired samples t-test was employed to examine differences between dependent variables. The results revealed a statistically significant improvement in general health ($p < 0.01$), vitality ($p < 0.01$), social functioning ($p < 0.05$), and the mental health summary measure ($p < 0.04$). Promoting physical activity through workplace exercise programs offers substantial benefits for workers' health and quality of life, contributing to the prevention of occupational diseases.

Keywords: physical health; mental health; workplace interventions; sedentary behavior

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1. Introduction

The influence of globalization and the continuous advancement of information and communication technologies have played a significant role in shaping the contemporary landscape of work. This context has witnessed a remarkable increase over recent decades in the number of professionals engaged in office-based activities in Western societies [1]. Office workers often exhibit behavioral patterns such as prolonged periods of sedentary work, limited utilization of specific muscle groups, and improper posture, all of which can lead to musculoskeletal disorders and discomforts impacting quality of life [2]. Additionally, physical inactivity is believed to contribute to physical deconditioning within this group [2]. Both extended periods of inactivity and prolonged sedentary episodes have been linked to increased risks of cardiovascular diseases and type 2 diabetes [3].

Recent clinical and public health guidelines emphasize the critical need to reduce sedentary behavior and increase physical activity to mitigate the risk of chronic illnesses [3]. According to the European Agency for Safety and Health at Work [4], around half of European workers report stress as a common workplace issue, contributing to approximately half of all lost workdays. Short-term effects of stress include headaches, muscle tension, increased heart rate and blood pressure, emotional instability, and irritability, while long-term

exposure can lead to severe fatigue, anxiety, depression, cognitive impairments, and chronic diseases [5]. Conversely, within occupational health issues, musculoskeletal disorders are described as the most prevalent in the European Union [4]. Musculoskeletal disorders, the most prevalent occupational health issue in the European Union, are also linked to prolonged periods of improper sitting, resulting in muscle stiffness, neck, shoulder, and lower back pain, as well as anatomical problems like lordosis, kyphosis, and scoliosis [6]. Chronic stress exacerbates both physical and mental health challenges, contributing to increased absenteeism and reduced productivity [7], which presents significant economic and social challenges for workplaces and society [8,9]. Workplace health-related programs focus on subsidizing initiatives that promote both health prevention and broader worker well-being, with the aim of aligning employee needs with organizational goals [10]. These programs are designed to enhance vitality, reduce stress, and improve job satisfaction, effectively supporting employee well-being. By fostering such initiatives, companies encourage a process of resource recovery that benefits both individual employees and the overall organization [11].

1.1. Quality of Life at Work

Quality of life is a critical parameter in medical and health research, encompassing a range of dimensions [12]. Although a standardized definition remains elusive, the World Health Organization (WHO) characterizes quality of life as an individual's perception of their position in life within the context of the culture and value systems in which they exist and in relation to their goals, expectations, standards, and concerns, which includes aspects such as physical health, psychological state, level of independence, social relationships, personal beliefs, and the individual's interaction with salient environmental features [13]. After decades of research and organizational adjustments, there is a consensus on the necessity of enhancing workers' quality of life through participatory and preventive strategies, both within and beyond corporate settings [3,4,12,13]. The interplay between quality of life and the work environment has become increasingly important, addressing critical issues regarding labor conditions, including the physical environment, interpersonal relationships, the significance of work, health promotion, and overall employee well-being [14]. Workplace quality of life serves as a vital factor that can generate substantial benefits for both organizations and employees. Adapting to this evolving organizational landscape is essential for optimizing performance [14]. Nielsen et al. [15] posits that enhancing worker quality of life involves the creation, maintenance, and improvement of the work environment, focusing on both physical and psychological/social conditions. This perspective has shifted the perception of workplaces from mere venues for work-related tasks to potential arenas for implementing physical activity and health promotion initiatives [16].

1.2. Workplace Interventions

Workplace health encompasses three key components: the impact of work on health, the influence of health on an individual's work capacity, and the opportunities for employers to promote health through various activities that encourage employees to adopt healthier lifestyles such as engaging in physical activity [17]. According to international guidelines [18], engaging in 150 to 300 min of moderate physical activity weekly, coupled with two days of resistance training, is vital for reaping health benefits. This recommendation stems from a dose–response relationship observed across various diseases and health conditions, wherein higher levels of physical activity correlate with a reduced disease risk and improved overall health [18]. In contrast, workplace exercise programs comprise structured physical practices intended to counterbalance the demands of work, creating active breaks to alleviate monotony. These programs play a crucial role in quality-of-life initiatives that aim to prevent diseases and promote health and well-being [19].

Interventions that encourage physical activity and healthy habits within the workplace have demonstrated efficacy in mitigating risk factors associated with various diseases

while positively affecting worker productivity and enhancing corporate image [9]. The explicit goals of these interventions include increasing job satisfaction, reducing stress, and improving individual health, ultimately leading to decreased chronic disease risk, lower absenteeism rates, and reduced healthcare costs [20]. The relevance of workplace health promotion continues to grow as organizations increasingly recognize the importance of a healthy workforce for achieving success [21,22]. According to the American College of Sports Medicine (ACSM) [18], accumulating evidence suggests that simultaneously decreasing sedentary time while increasing physical activity yields additive health benefits. Physical activity interventions typically involve brief sessions lasting 10 to 20 min, conducted in the workplace and targeting the muscle groups predominantly utilized during work hours [23]. Exercises should be customized to the specific work activity, taking ergonomic and psychological factors into account. Commonly included are stretching, postural correction, relaxation, and joint mobility exercises [24]. These structured interventions aim to minimize existing workplace risk factors, thereby contributing to the overarching goal of promoting health in the workplace and supporting employee health through exercise and wellness initiatives [19]. The overarching goal of workplace exercise programs is to enhance health and work performance, combat sedentary lifestyles, and improve stress management, ultimately leading to a better quality of life and increased professional and social effectiveness. These exercises can be conducted virtually anywhere and require no special equipment [25], making them easily accessible for simultaneous participation, which helps mitigate risks associated with prolonged computer use by promoting movement variability, improving posture, and increasing joint mobility [26]. The literature indicates that interventions involving counseling, education, and group exercises often result in significant improvements in employees' sedentary behavior, physical and mental health, healthcare costs, and absenteeism [27]. Additionally, these programs can effectively encourage increased physical activity, alleviate musculoskeletal pain, and enhance quality of life for office workers [28,29]. The workplace is increasingly viewed as a potential venue for promoting health and well-being, although some reviews report inconclusive or nonsignificant results. A review by Nguyen et al. [29] identified various exercise interventions that improved health-related quality of life for office workers, revealing significant positive effects on overall and mental quality of life. However, the association between exercise and physical quality of life was small and not significant due to the diversity of exercise types and intensities in the studies reviewed. Another study by del Pozo-Cruz et al. [2] utilized a video to remind workers of correct posture, followed by specific strengthening and stretching exercises over nine months, which did not yield significant improvements in quality of life compared to the control group. Frequent brief interruptions for physical activity during sedentary periods can enhance physical fitness and health, with evidence indicating beneficial glycemic and vascular changes that correlate with reduced cardiovascular risk [3]. Interruptions in sitting time can provide physiological benefits, emphasizing the necessity of breaks during sedentary work [30]. Chang's study [31] demonstrated that home-based physical exercise positively affected the health of remote employees, highlighting its potential as a health promotion strategy. Given the prevalence of remote work, remote workplace exercise emerges as a promising avenue for improving employee health and well-being. While the benefits of physical exercise for well-being are generally accepted, the specific relationship between exercise interventions and workplace well-being remains under-researched, revealing a gap in the literature [21]. Physical activity intervention programs can positively impact both workers and employers, necessitating further analysis of their effects in real workplace settings [32].

Considering the limitations previously mentioned, to develop and implement interventions that promote physical exercise in the workplace, there is a need to create studies that support (or not) the theoretical relationships presented. Following this, the study aims to investigate the effects of a 12-week workplace exercise program with predominantly video call sessions on the quality of life of workers whose main job involves sitting for sev-

eral hours. It is speculated that a 12-week workplace physical activity program, consisting of two sessions per week, may enhance the quality of life levels among participants.

2. Materials and Methods

2.1. Study Design and Sample Size Calculations

The design of the current study is quasi-experimental as it involves a single group of participants receiving an intervention, without the presence of a comparison group. In these studies, researchers do not randomly assign participants to different groups but observe the effects of the intervention on the same group before and after the implementation of the intervention. This type of study is often conducted when it is impractical or virtually impossible to use a randomized clinical trial design. In this case, it can provide preliminary and valuable information about the potential effects of a sustainable and ecological intervention.

The a priori sample size was calculated using the G*Power 3.1 program [33], considering the following inputs: anticipated effect size = 0.06, error probability = 0.05, statistical power = 0.95. The output indicated that a sample size of 33 participants was necessary to obtain sufficiently robust statistical power to consider the results reliable. Inclusion criteria included being a worker where the main occupational activity involves sitting for more than 6 h, being aged 18 years or older and younger than 65 years, and wanting to voluntarily participate in the study. Apparently healthy individuals or those with chronic diseases were included in the study. Exclusion criteria included pre-existing medical conditions that prevent safe participation in the workplace exercise program, recent orthopedic injuries, sprains, or surgeries.

2.2. Data Collection Procedures

Before data collection began, this study was reviewed and approved by the Ethics Committee of the Polytechnic Institute of Leiria, with opinion number 50/2023. All ethical and deontological protocols were followed in accordance with Article 21 of Law No. 58/2019 of the Portuguese Assembly, and the collected data were used solely for the purpose of the study and will be destroyed once their academic and research purposes are fulfilled.

The data collection procedure consisted of four main phases. In the first phase, a company where employees primarily work in a seated position was contacted by email for convenience to explain the study's objective and obtain approval from the managers for the study to be conducted. After acceptance by the management, two meetings were held, one by videoconference and another in person, regarding the planning for the intervention. During the in-person meeting, a visit to the company was conducted to establish initial contact with potential participants and understand the work environment. The second phase of data collection then began. In this phase, potential participants were informed about the guarantee of voluntariness and anonymity, the nature of the study and its purpose, as well as their freedom to withdraw at any time if they so wished. In the third phase, data collection from participants was conducted, distributing the consent form to participants along with a questionnaire that included questions related to sociodemographic data, frequency of physical exercise, questions about work, and a quality-of-life questionnaire. In the fourth and final phase, after the 12-week intervention, the quality-of-life questionnaire was administered again for participant reassessment.

2.3. Instruments

To collect data for demographic characterization of the sample, a questionnaire was used with the following elements: age, sex, time in the current position, hours worked per day, average time spent sitting, pathologies presented, and questions about physical exercise. To assess quality of life, the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36), translated and validated for the Portuguese population by Ferreira [34], was used. This questionnaire is a generalist instrument for assessing quality of life, easy

to administer and understand. The SF-36 has 36 questions, allowing the measurement of 8 main health dimensions, all of which are assessed through various items and on a scale of 0 to 100, with the extremes corresponding, respectively, to the worst and best possible health-related quality of life. The dimensions measured are physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health. These 8 dimensions can be aggregated into 2 summary measures: physical and mental. The physical summary measure includes the dimensions of physical functioning, role limitations due to physical health problems, pain, and general health perceptions. The mental summary measure comprises the dimensions of mental health, role limitations due to emotional problems, social functioning, and vitality [35]. The calculation to obtain the SF-36 result, as described in the interpretation manual by Ware et al. [36], involves entering the data, followed by recoding the items. Subsequently, an algebraic sum of each item is performed, followed by transforming the raw score to a scale from 0 to 100.

2.4. Physical Activity Intervention

The workplace exercise program consisted of a protocol with two distinct sessions, designed to be performed for 15 min over 12 weeks. All exercises were designed to have slow, controlled movements and be easily executed in an office environment, based on the methodology developed by Ollay and Kanazawa [22]. All sessions were conducted by a student with a background in physiotherapy. The sessions were held via videoconference, with three sessions conducted in person at the company premises. The exercises were performed using only body weight and focused on improving physical fitness, namely muscular endurance, balance, and flexibility. Each session consisted of twelve exercises each, aiming to cover different body regions. Session "A" included the following exercises: stretching with emphasis on the spine and upper limbs, wrist circumduction, finger mobilization, shoulder elevation, triceps strengthening, quadriceps stretching, marching, spinal extension, glute strengthening, hamstring stretching, glute stretching with hip mobility, and cervical mobility. Session "B" included the following exercises: cervical stretching, triceps brachii stretching, wrist flexor stretching, wrist extensor stretching, lateral spinal stretching, standing spinal flexion, squats, hip mobilization, ankle mobilization, shoulder joint mobilization, pull-up, and cat stretch spinal mobilization (Supplementary Materials Tables S1 and S2). Once a week, for 5 min after the workplace exercise session, participants received explanatory tips and guidance on ergonomic issues (body positioning at the desk), injury prevention related to work, breathing exercises to reduce stress, and techniques to reduce musculoskeletal pain (e.g., neural mobilization techniques for the median and sciatic nerves). Participants were also encouraged to increase their physical activity levels and use the stairs instead of the elevator.

2.5. Statistical Analysis

Data were exported to the IBM SPSS Statistics v23 program. Participants who adhered to the program less than 75% or were absent for 10 consecutive sessions were excluded from the analysis. Descriptive statistics, including mean and standard deviations, were calculated for all variables under investigation. The normality of the data was assessed using the Shapiro–Wilk test for sample sizes smaller than 50. Additionally, for acceptance of a univariate normal distribution, skewness and kurtosis values had to be between $-2/+2$ and $-7/+7$, respectively, according to Cohen [37]. To explore differences between dependent variables, a paired samples t-test was used. The significance level for rejecting the null hypothesis was set at 5% for all statistical tests. Effect size (d) was calculated with reference values for interpretation as follows: "small" effect = 0.2, "medium" effect = 0.5, and "large" effect = 0.8.

3. Results

A total of 75 participants were recruited, of whom 46 agreed to participate voluntarily and underwent the first evaluation. Thirteen participants were excluded due to more than 25% absence, and thirteen participants were excluded because they did not complete the second evaluation (see Figure 1). Thus, 19 participants were included in this study (female = 6, male = 13), aged between 21 and 48 years (M = 32.26; SD = 9.03). Among the participants, 78.9% reported having a hybrid work regime, 15.8% reported an on-site work regime, and 5.3% reported a home office regime. The prevalence of reported pathologies among participants included 63.16% with no pathologies, 10.53% with hypertension, 5.26% with color blindness, 5.26% with myopia, 5.26% with muscle contractures and poor circulation, 5.26% with both myopia and astigmatism, and 5.26% with shoulder bursitis. Additionally, 84.2% spent between 6 to 8 h seated per day, and 15.8% spent between 9 to 12 h seated. Among the participants involved, 78.9% reported engaging in some type of physical exercise (walking, running, cycling, padel, yoga, biodanza, gym, calisthenics, futsal, soccer, and archery) with a frequency ranging from 1 to 5 times per week (M = 2.46; SD = 1.45).

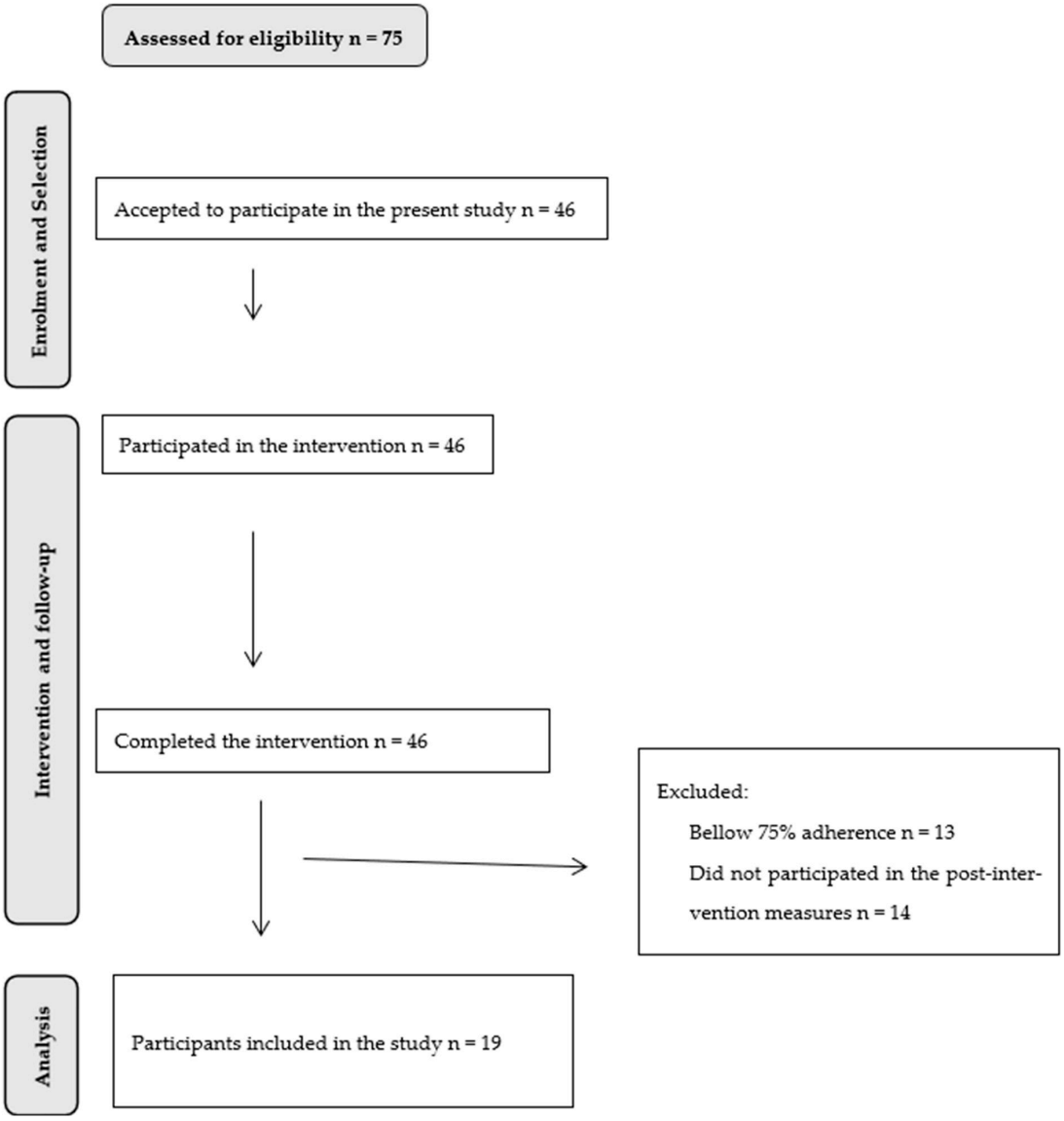

Figure 1. Participant flowchart.

In Table 1, we can observe the results of the descriptive and inferential statistics of the quality-of-life indicators before and after the intervention. The data indicate a normal distribution as the Shapiro–Wilk test showed non-significant values ($p < 0.05$). Additionally, the values for skewness and kurtosis were within −2 and +2 and −7 and +7, respectively. The data indicate that there are statistically significant differences in in general health ($p < 0.01$), vitality ($p < 0.01$), social functioning ($p < 0.05$), and the mental health summary measure ($p < 0.04$). Indeed, there was a significant increase in these three dimensions and the overall mental component, as observed by the increase in mean values from pre-intervention to post-intervention. The effect size was always large, given that according to the results, the effect size ranged from small for social functioning (d = 0.37) to medium for general health (d = 0.56), vitality (d = 0.60), and mental mean scores (d = 0.42).

Table 1. Descriptive and inferential statistics of quality-of-life dimensions.

Variables	Pre-Intervention (T1)		Post-Intervention (T2)		*t*	*p*	d
	M	SD	M	SD			
Physical Functioning	95.26	6.34	94.21	6.29	0.78	0.22	-
Limitations due to Physical Health	91.77	15.19	89.13	14.72	0.78	0.30	-
Pain	71.79	17.86	73.89	13.80	0.55	0.31	-
General Health	63.89	20.65	70.74	22.65	−0.49	0.01	0.56
Vitality	51.63	16.53	61.87	15.90	−2.43	0.01	0.60
Social Functioning	80.92	22.19	89.47	9.56	−2.59	0.05	0.37
Emotional Functioning	86.85	16.96	85.96	17.14	−1.61	0.43	-
Mental Health	75.26	17.44	77.89	13.37	0.18	0.17	-
Physical mean score	79.63	9.81	81.87	8.72	−1.00	0.20	-
Mental mean score	73.66	15.18	78.79	9.00	−0.87	0.04	0.42
Overall Quality of Life	77.16	11.07	80.30	7.28	−1.82	0.10	-

Notes: M = mean; SD = standard deviation; *t* = *t*-test value; *p* = significance value at 0.05; d = effect size. For exploratory reasons, the authors included data from 13 participants with an adherence rate below 75% (ranging between 60% and 70%) along with the 19 participants who met the initial criteria, and the results were similar to those reported in Table 1. In fact, including these 13 participants did not alter the significance of the various quality of life indicators. Therefore, for transparency, the authors presented the data from the 19 participants who had an adherence rate above 75% and attended both evaluation sessions. Additionally, for exploratory purposes, the authors analyzed data from the 19 participants with the inclusion of the 14 participants who had an adherence rate above 75% but failed the re-evaluation. Again, the results were similar to those reported in the Section 3, with the inclusion of these participants not altering the significance of the quality-of-life indicators. In fact, some indicators showed a greater effect size compared to the results with only 19 participants. In both cases, we use the Expectation-Maximization (EM) estimator, which is an iterative procedure. The process involves using auxiliary variables to estimate a value (Expectation) and then assessing whether this value is the most probable (Maximization). If the value is not the most probable, the procedure recalculates a more likely value.

4. Discussion

This study aimed to investigate the effects of a 12-week workplace exercise program, conducted twice weekly, on the quality of life of workers whose primary job involves prolonged sitting. It was found that workers experienced an improvement in their perceived quality of life. The main observations included significant enhancements in general health, vitality, social aspects, and the mental health summary measure of the participants. However, there were no statistically significant improvements in other dimensions of quality of life, such as functional capacity, physical performance limitation, pain, emotional aspects, and mental health. Despite the overall improvements in quality of life, these were not significant.

A systematic review by Abdin et al. [21] supports the results of this study, indicating that participation in any form of physical activity in the workplace can improve the mental quality of life for office workers. Additionally, studies like Zhang et al. [7] highlight the effectiveness of movement-based activities in reducing stress, even when performed remotely. Moreira et al. [38] further affirm that exercising during work hours, even briefly, contributes to relaxation and improvement in mental quality of life.

In the intervention group of the study by Moreira et al. [38], participants reported a positive improvement in their quality-of-life perception after participating in a 17-week workplace exercise program. The sessions, lasting 15 min each, were conducted remotely three times a week. Improvements were observed in the domains of pain, physical aspects, functional capacity, and emotional performance, with pain being the only domain showing significant improvement. In the present study, pain did not show significant improvement. This discrepancy might be partially explained by Río et al. [9], who reported that the magnitude of pain perception improvement in different anatomical areas is related to participation, adherence, and commitment to the program. Furthermore, workers who were physically active before the program reported lower pain perception. Considering the biopsychosocial model, pain perception results from a multifactorial interaction between biological, psychological, and social factors. Therefore, optimal strategies for pain prevention and rehabilitation should focus not only on physiological factors, such as workload reduction or isolated physical exercise, but should also incorporate all three elements—physiological, psychological, and social—in a multidisciplinary intervention [39]. The vitality dimension, according to Ware et al. [36], evaluates individual perceptions of energy and fatigue. In this context, Jakobsen et al. [39] demonstrated that physical activity in the workplace can boost social capital among teams and enhance worker vitality. Supporting these findings, Pinetti et al. [40] verified the effectiveness of exercise programs, especially those combining resistance exercises, stretching, and aerobic activities, in reducing fatigue during and after the workday. These studies reinforce the findings of the present study, emphasizing that implementing workplace exercise programs promotes not only social well-being but also increased vitality and energy among workers.

The findings of this study demonstrate that although there were improvements in the overall quality of life score, they were not significant, aligning with the findings of Serra et al. [23], where a workplace exercise program conducted twice a week for ten minutes over twelve months was not considered effective in improving workers' quality of life. In contrast, Nguyen et al. [29] highlighted that the effects of physical exercise on global health-related quality of life were more pronounced in unhealthy office workers compared to those already considered healthy, suggesting that the effectiveness of interventions may vary depending on the participants' initial health status. In our study, participants had above-average baseline quality of life scores, indicating generally good health at the start of the intervention. This pre-existing level of well-being may have limited the scope for further significant improvement.

Based on the present findings, frequent, brief interruptions for physical activity during sedentary periods may enhance physical fitness and health. These results suggest that such interruptions are associated with an improvement in perceived quality of life. The physiological benefits of standing up and breaking up sedentary time highlight the necessity of incorporating breaks during extended periods of sitting, particularly in sedentary work environments [30]. In light of the rise in remote work, exercise interventions designed for this context emerge as a promising strategy for enhancing employee health and well-being. This pilot study aims to demonstrate that even virtual exercise sessions can provide benefits for quality of life. Given the frequency and duration of these sessions, as well as the simplicity of the exercises, which rely solely on body weight, there appears to be potential for improving the well-being of individuals who spend a significant portion of their day sitting for 6 to 8 h. Thus, it is essential to evaluate the impact of physical activity programs in actual workplace settings to better understand their effects on both employees and employers [32].

4.1. Strength and Practical Implications of the Pilot Study

It is important to emphasize that this was a pilot study aimed at providing preliminary evidence on the potential of a workplace exercise program to improve indicators of quality of life. Despite some limitations, such as excluding participants with an adherence rate below 75% and the inability to measure 14 participants post-intervention, the current results

demonstrate that a program consisting of two 20 min sessions per week can significantly enhance vitality, general health, social functioning, and the mental mean score. Given the design of this study, which involved implementing the program in a real workplace setting rather than a laboratory context, there is an intention to continue the program, incorporating tools to improve adherence and post-intervention measurement. Furthermore, considering the limitation of having only one experimental group, as discussed in the following section, this pilot study aims to apply the same program in different professional contexts with similar inclusion criteria. This approach will allow for an analysis of how the program may yield different (or similar) results in varied professional settings and facilitate a discussion of potential outcomes in light of the existing literature.

4.2. Limitations and Agenda for Future Research

Despite the intriguing findings of this study, several limitations must be acknowledged. The absence of in-person supervision hindered our ability to correct participants' techniques and tailor exercise intensity on an individual basis. Furthermore, the reliance on self-reported evaluation questionnaires may introduce social bias in responses and interpretations. The lack of a control group significantly restricts data interpretation and highlights the need for future studies to include such a group. Additionally, factors such as sample size, intervention duration, and exercise program intensity may have contributed to the observed lack of significant findings. Small sample sizes and short intervention periods often reduce statistical power and may not provide sufficient opportunities for meaningful changes in overall quality of life. While mean scores showed improvement, the lack of statistical significance may reflect these methodological limitations, as well as the participants' already high baseline health status. Future research should consider employing more efficient scientific designs, such as a crossover design, especially if recruitment of potential participants proves challenging. The absence of a control group further complicates the attribution of improvements solely to the interventions. Finally, the small sample size limits the generalizability of the results; a larger sample could yield more robust findings and enhance the external validity of the study.

The authors acknowledge the limitation of data from more than 50% of the participants initially considered for the study. This includes participants who had an adherence rate lower than the initially defined 75% and the inability to reassess the parameters for 14 participants. For exploratory reasons, the authors included data from 13 participants with an adherence rate below 75% (ranging between 60% and 70%) along with the 19 participants who met the initial criteria, and the results were similar to those reported in Table 1. In fact, including these 13 participants did not alter the significance of the various quality of life indicators. Therefore, for transparency, the authors presented the data from the 19 participants who had an adherence rate above 75% and attended both evaluation sessions. Additionally, for exploratory purposes, the authors analyzed data from the 19 participants with the inclusion of the 14 participants who had an adherence rate above 75% but failed the re-evaluation. Again, the results were similar to those reported in the Section 3, with the inclusion of these participants not altering the significance of the quality-of-life indicators. In fact, some indicators showed a greater effect size compared to the results with only 19 participants. Thus, despite the study's limitation regarding sample size, the results are considered relevant for future studies. It is also worth noting that other studies have faced difficulties in obtaining a sufficient sample size but have demonstrated interesting results [41–43].

5. Conclusions

Significant improvements were observed in general health, vitality, social functioning, and the mental health summary measure of participants following the implementation of a twice-weekly workplace exercise program over a 12-week period. These findings highlight the possible efficacy of workplace exercise interventions, even with a frequency of only two sessions per week, in improving workers' quality of life-related outcomes.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/app14219835/s1, Table S1: Session A Protocol; Table S2: Session B Protocol.

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Institutional Review Board Statement: This study received ethical approval from the Ethics Committee of the Polytechnic University of Leiria (CE/IPLEIRIA/50/2023, 29 September 2023), ensuring that all research procedures adhered to the ethical guidelines established by the institutional and national research committee. The study was conducted in accordance with the principles outlined in the 1964 Helsinki Declaration and its subsequent revisions or comparable ethical standards.

Informed Consent Statement: Prior to their involvement in the study, all participants were provided with detailed information about the study's objectives, procedures, and potential risks and benefits. Written informed consent was obtained from each participant, ensuring their voluntary participation and understanding of their rights.

Data Availability Statement: The data utilized in this study were obtained under a specific license exclusively for the purposes of this research. The data supporting the findings of this study are not publicly available but can be requested and accessed upon reasonable inquiry.

Conflicts of Interest: The authors declare no conflict of interest.

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