Differential efficacy of physical exercise and mindfulness during lunch breaks as internal work recovery strategies: A daily study*

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Abstract: This study aims to identify whether daily activities during the lunch break, performed before eating, are associated with improvements in several indicators related to recovery from work stress. No existing studies examine the daily effects of sitting mindfulness meditation and aerobic physical exercise practiced during lunch break as daily internal work recovery activities. This three-armed randomized controlled trial was carried out over 22 working days with service sector workers (n = 94, age mean, 46.8). The mindfulness group received a mindfulness-based intervention (sitting meditation), while the physical exercise group practiced an aerobic exercise program with the same time intervals as the mindfulness group (15-30 minutes); the third group was the control group. We measured daily effects on fatigue, psychological detachment, sleep quality, stress symptoms, and attention problems. Measurements of daily variables were collected through an *ad hoc* App. Growth curve analysis reveals that mindfulness and physical exercise can effectively reduce fatigue, stress boschphysical exercise significantly improved sleep quality.

Keywords: Mindfulness; stress; physical exercise; work recovery; daily study.

Introduction

Research into recovery from work has made enormous progress over the last two decades, generating a wealth of knowledge for employee well-being (e.g., Bennett et al., 2018; Karabinski et al., 2021). However, there are few studies on recovery activities performed during the working day, especially during lunch breaks. Some of these studies are already showing the importance of the effects of lunch break recovery activities. For example, the longitudinal study by Sianoja and colleagues (2016) suggests that successful lunchtime recovery may have long-term consequences, such as higher energy levels one year later.

According to Bosch et al. (2018) and Krajewski et al. (2010), concentration on tasks drops off shortly before the lunch break, making workers less productive. Previous research has shown that practicing brief recovery activities at this moment may help employees clear their minds, return to work after lunch with more energy, and reduce the adverse effects of work at the end of the working day (De Bloom et al., 2014; Hunter & Wu, 2016; Krajewski et al., 2010.

Different activities can facilitate stress recovery (Sonnentang, 2018). There are low-effort, physical, social, or challenging activities. In this line, this study attempts to shed light on two types of practices. Taking note of the growing demand for Mindfulness (MF) courses in companies (Vonderlin et al., 2020), we have analyzed this practice alongside cardiovascular Physical Exercise (PE), which is common in corporate wellness programs, against a Control Group (CG). Regarding the choice of short practice intervals, research has shown that daily PE is better for stress than intermittent PE (Amaro-Gahete et al., 2020). Therefore, we aimed to test whether this daily practice applies to mindfulness.

To test our hypotheses, we combine an RCT (randomized controlled trial) design with daily measurements to study the differential effects of 15-30 minutes of daily MF or PE practice before lunch on five variables related to daily work stress: the subjective experience of fatigue,

psychological detachment, sleep quality, daily stress symptoms, and attention problems. Thus, our study contributes to the literature in three different ways. First, our daily measurements extend research on the effect of the daily practice of MF or PE, compared to longer practice sessions a few days per week (De Bruin et al., 2016). Secondly, our study sheds light on the question of whether MF or PE practice during the lunch break is feasible and effective in improving some important occupational mental health variables such as fatigue, detachment, sleep, stress, or attention (Bosch et al., 2018; De Bloom et al., 2014). Last, our RCT, with daily measurements taken just at the end of the working day, may confer ecological validity to the results in response to the request by certain authors (e. g. O'Shea et al., 2016) on the need for high-quality trials in work health interventions. In this sense, our ultimate objective is for companies to incorporate recovery activities in the most efficient way possible. For this reason, the study provides knowledge about the effects of MF and PE on work-stress recovery compared to a control group.

Theoretical background and hypotheses development

One of the mental health tools incorporated into companies is MF, a non-religious practice based on the experience of mindful meditation and calm attention to the moment (Kabat-Zinn, 1990). We have not found specific studies of MF practice during the lunch break to recover from stress. However, considering that MF is considered a low-effort activity (Hülsheger et al., 2018), there are studies on the effects of low-effort activities during the lunch break that have shown lower levels of cortisol and a reduction in stress and fatigue (Krajewski et al., 2010), higher levels of psychological detachment during break periods, and higher levels of well-being and focus after work (Sianoja et al., 2018). According to several meta-analytic results (Bartlett et al., 2019; Lomas et al., 2017; Vonderlin et al., 2020), *Mindfulness-based interventions* (MBI) have relevant effects in work settings, including stress reduction and incremental improvements in levels of mental health,

trait mindfulness, well-being, performance, job satisfaction, sleep quality and sleep duration (Choi et al., 2022).

Another healthy activity that over the last decade has been integrated into some businesses' employee wellbeing programs is physical activity. Although the positive effects of general physical activity on health are commonly known (reducing the risk of obesity, cardiovascular disease, diabetes, and depression (Bayattork et al., 2019), one in four adults still does not meet the global recommendations of World Health Organization (WHO). To increase general physical activity and reduce sedentary behavior in adults, the WHO (2018) recommends integrating it at the workplace since adults spend half of their waking hours there on weekdays.

The first studies that looked at the effects of physical activity, specifically at lunchtime, were Brown et al. (2012), Trougakos et al. (2014), and Sianoja et al. (2018). These authors examined the effects of walks in a natural or park setting, but walks are considered physical activity, not PE. Considering that PE is a specific form of intense physical activity (Malina, 1996), we chose it as an intervention because there is less scientific literature on it and we consider that the effects could be more significant. PE is highly recommended to combat occupational stress (e.g., Kettunen et al., 2015), and absenteeism (Milton et al., 2021). Some studies relate regular after-work PE sessions to increased vigor and well-being lasting throughout the evening (Oerlemans et al., 2014). As far as we know, only Bramante et al. (2018) and Michishita et al. (2017a, 2017b) have analyzed the viability of PE at work during lunchtime and how it improves workplace vigor and decreases presenteeism among workers. More studies are needed to analyze other potential effects.

While recovery strategies can replenish an employee´s energy, and psychological and social resources, we have decided to focus exclusively on energy-related aspects like the subjective experience of daily fatigue, psychological detachment, quality of sleep, stress symptoms, and attention difficulties. Key theoretical considerations will be outlined in the following section.

Effects on daily perceived fatigue

Recovery strategies were initially conceived to combat the specific effects of fatigue (Sonnentag, 2018). Fatigue is a common symptom among workers due to high work demands that leads to errors and accidents, and increases the risk of musculoskeletal injuries, anxiety, and depression (Santos et al., 2020). Although the nighttime is the natural time to rest after a day's work, there are also certain times throughout the working day, such as lunch breaks, that can be taken advantage of to reduce the accumulation of fatigue.

Studies have demonstrated the benefits of several active rest interventions in the workplace to promote health (Van Eerd et al., 2016), but little is known about whether the daily practice of MF or PE at lunch can also significantly reduce perceived fatigue. Regarding MF practice, it could be inversely related to fatigue (e.g., Rook & Zijlstra, 2006). Davidson et al. (2003) found that MF improved energy levels in high-stress jobs, and Michel et al. (2021) observed how only three-weeks of a self-instructed online MBI could reduce fatigue. According to Choi et al. (2022), MF may increase the individual's awareness of their physiological state, ensuring they become aware of high fatigue levels sufficiently in advance to adopt self-regulation mechanisms. MF practice may also help counteract mental fatigue caused by multitasking (Kudesia et al., 2020). These are some of the reasons why we believe that practicing MF every day at lunch could help reduce perceived fatigue

Concerning practicing PE at the workplace, some studies have observed its benefits on musculoskeletal disorders (Van Eerd et al., 2016) or pain perception, but little is known about perceived fatigue from work. Various workplace training protocols have been tested (stretching, relaxation, light training, etc.). However, resistance training is the most effective for reducing perceived fatigue (Santos et al., 2020). This is why our intervention is based on resistant exercises.

According to Rook and Zijlstra (2006), fatigue increases at the beginning of the resistance practice, but when the practice is consolidated after some weeks, fatigue gradually decreases. Moreover, since fatigue from a working day can deter after-work PE (Bláfoss et al., 2018), we assume that the lunch break may be a more propitious moment; insofar as fatigue is not usually so intense as to be an obstacle to the practice of the activity. Based on these rationales, we propose the following hypotheses:

Hypothesis 1: A daily practice of MF at lunchtime is related to lower daily fatigue levels in comparison to the CG (*Hypothesis 1a*); A daily practice of PE at lunchtime is associated with lower daily fatigue in comparison to the CG (*Hypothesis 1b*).

Effects on daily psychological detachment

While meta-analyses of the effects of each recovery process are limited, psychological detachment is especially beneficial in the presence of elevated work-related stress factors (Chong et al., 2020). The inability to stop thinking about work and work-related problems during leisure time could be a detachment failure (Sonnentag & Fritz, 2015). Some studies have shown that detachment during work lunch breaks can help employees recoup their energy (Bosh et al., 2018), which correlates with both positive affect (Rhee & Kim, 2016) and a lower need for recovery due to higher vigor and lower exhaustion over the year (Sianoja et al., 2018). It has also been related to better work engagement and job performance (Bennett et al., 2020). Despite these promising findings, there are gaps in the literature on what to do during these breaks to disconnect since, for example, if we go out to lunch with colleagues, there is a high probability of talking about work and, therefore, of not disconnecting.

MF is an activity that can be practiced at lunch, which helps to strengthen the mental exercise of disconnecting when we are not at work. It has been defined as enhancing and being aware of the present moment without judgment (Kabat-Zinn, (1990). This is why Choi et al. (2022)

have observed that developing this mental state may promote healthy self-regulation and psychological detachment outside the work setting. Although we have not found studies that analyze MF effects on detachment during lunch, we found relevant studies like the one from Hülsheger et al. (2014), who observed that the MF experienced during work was related to better subsequent sleep quality and how this relationship was mediated by psychological detachment from work. For these reasons, we believe that introducing MF at lunch could help workers to achieve a better psychological detachment experience that facilitates resource recovery by "switching off" mental representations of work that keep psychophysiological systems activated (Sonnentag & Fritz, 2007).

Physical activities are also assumed to improve psychological detachment for several reasons (Feuerhahn et al., 2014). First, people tend to concentrate hard on form and movement during workouts; hence they become absorbed, leaving little room to work on problems (Sonnentag et al., 2014). More specifically, high-intensity physical activity can facilitate psychological detachment experiences by inhibiting task-related rumination. In contrast, moderate-intensity physical activity does not inhibit rumination but does improve energetic arousal (van Hooff et al., 2019). That could explain the failure to observe any positive association between low-intensity physical activities like walking and recovery (Calderwood et al., 2020). Hoover et al. (2022) recently showed that a break used for 15-min of exercise on a stationary bike resulted in higher energy levels than a 15-min relaxation break, while relaxation breaks resulted in higher detachment than a physical activity break.

Keeping in mind that it is not only what is done but also where, secondly, we also want to take into account studies that have confirmed that PE practice outside the office, like gyms or natural environments, may produce feelings of 'getting away from work' (Sianoja et al., 2018). For this reason, and in contrast to studies that analyze the effects of low-intensity stretching exercises in

the same workplace (e.g., Scharf & Tilp, 2023), we have preferred to analyze the effects of going outside and performing a short but intense exercise (reaching 140-160 heartbeats per minute) in order to observe if an optimal level of psychological detachment is reached. Consequently, our hypotheses are as follows:

> *Hypothesis 2*: MF at lunchtime is related to increased levels of psychological detachment during lunch breaks in comparison to the CG (*Hypothesis 2a*); PE at lunchtime is associated with increased levels of psychological detachment during lunch breaks in comparison to the CG (*Hypothesis 2b*).

Effects on daily sleep quality

Sleep plays a particularly prominent role in the research on recovery from work (Demerouti et al., 2009). A study by Cropley et al. (2006) observed that the inability to stop thinking about work issues during time away was associated with more sleep problems. In this way, some authors (Sonnentag & Geurts, 2009) have affirmed that off-job recovery activity that promotes recovery should improve sleep quality. On the contrary, activities that hinder recovery should increase sleep problems. Although most studies on recovery and sleep quality are based on external recovery activities, some analysis has already observed how well utilized breaks during the working day provoked positive effects before going to sleep (Virtanen et al., 2021). In general, Sonnentag (2018) observed how person-directed recovery strategies developed by companies during the workday affect sleep quality. Here is a short summary of what some of the literature says about the effects of specific activities such as MF or PE on sleep quality.

The effects of MF on sleep quality have been considered in studies specifically designed to highlight the role of MF in recuperation and enhanced sleep quality in adults (Ong et al., 2012; Michel et al., 2021). According to reported findings, it is likely that two mechanisms underlie the

relationship between MF and sleep quality in non-clinical populations. First, an abatement of rumination on the day's event may facilitate sleep and improve sleep quality (Querstret et al., 2016). Second, difficulties falling asleep are often preceded by rigid attempts to control the sleep process (Wolever et al., 2012). Trying to control sleep increases cognitive activity, which hinders sleep. By promoting a non-judgmental attitude towards the present experience (not being able to fall asleep), individuals can better let go and fall asleep naturally (Rusch et al., 2019). Thus, through self-regulatory processes, including attention regulation, MF may facilitate successful sleep (Hülsheger et al., 2018). However, we have not found studies analyzing the specific effects of MF during lunch breaks on the quality of sleep at night. We anticipate that the effects at the beginning will not be significant, but once the practice of MF has been internalized, it may improve sleep quality.

Previous studies have reported that regular exercise improves sleep quality (Kredlow et al., 2015). Since PE is a physically demanding activity and requires physical recovery in itself, it is widely assumed that sleep is a behavior that aids physical recovery (Nägel & Sonnentag, 2013). Between different forms of physical activity, medical researchers have emphasized that moderate-to-vigorous physical activity (MVPA) is relevant to unlocking positive outcomes stemming from being active (Chomistek et al., 2017). Calderwood et al. (2020) recently observed that daily MVPA is positively associated with leisure-time psychological detachment, which predicted longer sleep duration that undermined next-morning depletion. Along the same line, Skarpsno et al. (2020) observed that there was no apparent modifying effect of low physical activity in workers who experienced excessive work-related fatigue and risk of insomnia. Although we have not found studies analyzing the effects of a short, intense PE session performed daily during work breaks, we expect the effects to be similar to those of exercise performed outside working hours. Based on these rationales, we propose the following hypotheses:

Hypothesis 3: MF during lunch breaks is associated with better sleep quality in comparison to the CG (*Hypothesis 3a*); PE during lunch breaks is associated with better sleep quality in comparison to the CG (*Hypothesis 3b*).

Effects on daily stress symptoms

Stress is a natural health risk which triggers headaches, increased heart rate, emotional instability, anxiety, depression, and cognitive problems (Schneiderman et al., 2005). Work-related stress is associated with decreased productivity, increased absenteeism, work accidents, and poor performance (Wolever et al., 2012). Some studies have considered the lunch break a time for active recovery activities with significant effects of reduced work stress (Díaz-Silveira et al., 2020).

Richardson and Rothstein (2008) conducted a meta-analysis to determine the effectiveness of stress management interventions in occupational settings, including 63 experimental studies, which concluded that relaxation and meditation techniques were the most popular individual interventions—with an average intervention length of 6.5 weeks and weekly 1 to 2-h sessions, and with an average effect size of 0.50 (Cohen's d). Chong et al. (2020) later observed that MF as a workday respite activity is negatively related to work stress and emotional exhaustion. As regards to MF, it seems that attention to the present moment is generally associated with a series of psychological benefits, including lower levels of daily stress and anxiety (Vonderlin et al., 2020). Job-related stressors may not be present during leisure time, but they are still latent in the form of worries and preoccupation with work issues. Thus, when individuals learn to disengage psychologically, they become more able to rest from work-related demands and recover mental energy.

Regarding PE, its effectiveness in reducing stress and other related symptoms has been convincingly proven (Archer et al., 2011). Although PE has not yet been fully integrated into general mental health treatment, it has been observed that more and more organizations are

promoting exercise to reduce work stress in their occupational health interventions (Vella et al., 2023). As reported in a meta-analysis by Conn et al. (2009), not only have workers in the studies found a way to exercise at the workplace, but also it has been observed that workplace physical activity interventions can reduce general stress levels (moderate effect of d = .33). Thus, there are some studies on where to practice PE, but little is known about the optimal time to do it in order to minimize stress symptoms. People are less likely to practice PE after a stressful day at work because daily stress symptoms have probably already consumed most of the worker's energy. However, in the middle of the day, workers still have enough energy to carry out a session of PE to reduce the effects of stress. Based on these rationales, we propose the following hypotheses:

> *Hypothesis 4:* MF at lunchtime is related to lower levels of daily stress symptoms in comparison to the CG (*Hypothesis 4a*); PE at lunchtime is associated with lower daily stress symptoms in comparison to the CG (*Hypothesis 4b*).

Effects on attention difficulty

Previous studies have found that regular breaks at work (i. e. going for a coffee or lunch with colleagues) help maintain concentration (Krajewski et al., 2010). Furthermore, studies on specific interventions for recovery have found even better associations between breaks with a recovery activity, e.g., relaxation exercises and physical activity, and self-reported concentration (Sianoja et al., 2018). In particular, it has been observed that MF could be an effective recovery activity for improving attention since it is an exercise in attentiveness (Vonderlin et al., 2020). Thus, some studies have observed improvements in different attentional processes from even brief MF exercises. In particular, some trials suggest that MBI may improve attention control on the task (Choi et al., 2022) and selective and executive functions like detachment and behavior regulation (de Bruin et al., 2016). In response to such findings, organizations interested in boosting the attention capacity of their employees have begun to offer attention control training using MF

techniques. Taking into account that most of these studies on attention analyze the effects of an MBI with a determined duration, we are more interested in knowing the effects of the practice included in a personal routine and prolonged in time. For this reason, we are interested in observing whether practicing MF at lunch helps reduce attention difficulties after lunch since we have not found any studies on this issue.

Concerning PE, studies like Voss et al. (2013) have observed that its practice could also affect attention, improving performance in various tasks involving attention and memory. Meta-analytic results suggest that the positive influence of PE on cognition appears mainly in tasks that require close attention and intense activation of executive functions (McMorris et al., 2018). These functions imply higher-order cognitive capacities involving multiple facets such as planning, rationalization, programming, and initiation (Pontifex et al., 2009). However, the studies we have found in the workplace context (e.g., Krajewski et al., 2010; Riedl et al., 2023; Sianoja et al., 2018), analyze the effects of physical activity, and have not looked at PE, which entails a higher intensity of effort. In the same sense, we have only found studies of concise duration (<10 min) in which no significant effects on attention were observed (Bennet et al., 2020). Thus, higher intensity and more extended PE activity may achieve better results regarding attention at work after lunch than in studies with physical activity interventions. For this goal, we propose the following hypotheses:

Hypothesis 5: MF at lunchtime is associated with a reduction in attention difficulty during the working day in comparison to the CG (*Hypothesis 5a*); PE at lunchtime is associated with a reduction in attention difficulty during the working day in comparison to the CG (*Hypothesis 5b*).

Method

Design and participants

To test out hypotheses, we conducted a three-arm RCT with daily measures. There were two active groups (MF and PE) and an inactive group (CG). The intervention lasted 22 working days, during which participants practiced 15-30 minutes of MF or PE on their lunch break (before lunch). Each day, just at the end of the workday, the participants answered five questions through a mobile App. In addition, each day they recorded on a personal record sheet whether they had done the practice and for how long (Table 2).

Participants in this study were employees at the headquarters of two large multinational corporations in the service sector. We chose them because of the availability of a free gym and showers and their flexible lunch break time (up to 90 min). Given this flexible schedule, we asked workers before conducting the RCT what they usually do during their lunch break through a question with several response options. The results reported that most (51.4%) typically go out and have lunch with their colleagues at the company canteen or a nearby restaurant. Other employees take advantage of their break to eat something light in front of the computer and move forward with work (13.9%) or to carry out personal tasks (12.5%). Only some workers took the opportunity to carry out any active rest activity (6.9%).

Each company's human resources department helped us select and contact employees with similar characteristics in terms of type of contract (full-time, not part-time) and position within the company (intermediate). For the intervention, we first recruited 123 workers with similar schedules (9-18h.) and level of responsibility (medium level) within these companies. Secondly, we screened workers according to inclusion criteria - not being a regular MF or PE practitioner- and exclusion criteria - to be free of any severe physical or mental pathology. Finally, a total of 94 participants were selected and randomly allocated to the MF group (n = 30), PE group (n = 30), and control group (n = 34). Women made up 67%, and the average age was 46.8 years (SD = 6.3).

The intervention lasted five weeks, during which it increased its duration by 5 minutes (see Table 1). Before the intervention, participants received a 4-hour training course. During the intervention, both groups practiced each Monday on-site with their respective instructors. They practiced individually for the rest of the work week through audio and written guidelines. All of them were in constant contact with their instructor via e-mail. The MF group only practiced the sitting meditations from the *Mindfulness-Based Stress Reduction* program (MBSR, Jon Kabat-Zinn, 1980), adjusted to the time of our intervention. The MF training was given by a certified MBSR instructor who carried out seated meditations only (see in Table 1 the content of MBSR sitting meditations). The other MBSR exercises, such as the bodyscan, were not carried out, since what we wanted to measure were exclusively the effects of sitting meditation. Participants in the PE group practiced aerobic physical exercise at a moderate to high intensity (between 120 and 140 beats per minute). A certified exercise instructor also supervised the practice. Each working day, they could choose between exercising at the company gym (elliptical bike, rowing machine, treadmill, or exercise bike), or running in a park close to the workplace, always following the time and intensity guidelines. Each participant filled in a daily registration sheet (see Table 2) stating whether they had done the practice. At the end of the intervention, only n = 5 in MF and n = 9 in the PE group did not achieve the cut off of 70% completion of the intervention (see Consort diagram in Fig. 1 Suppl.).

Insert here Table 1

Insert here Table 2

Measures

There is abundant evidence in health psychology research on the use and psychometric properties of single-item measures of daily fatigue (Van Hoff et al., 2007), such a sleep (Sonnentag

& Binnewiess, 2013), stress (Houdmont et al., 2019), and attention difficulty (Fisher et al., 2015). The participants answered five items using a 5-point Likert scale upon finishing each workday over twenty-two days using a mobile App specifically developed for the study (see Figure 2 Suppl.). These items were as follows:

Daily fatigue was measured via the single item proposed by Van Hoff et al. (2007) and De Bloom et al. (2011), with a slight modification to specify the timing of the response. The item was 'How fatigued do you feel now at the end of your working day?' (1 = not fatigued at all; 5 = totally fatigued).

The *daily psychological detachment* was assessed using a single item taken from the *Recovery Experience Questionnaire* (Sonnentag & Fritz, 2007) adapted to the timing of the recovery experience, as described in de Bloom et al. (2014). The item was 'I distance myself from my work during the lunch break' (1 = not distanced at all; 5 = distanced).

Daily sleep quality was measured with a single item from the *Pittsburgh Sleep Quality Index* (Buysse et al., 1989) adapted for daily evaluations as in similar prior studies (Sonnentag et al., 2008). The item was 'How do you evaluate last night's sleep?' (1 = terrible sleep quality; 5 = perfect sleep quality).

Daily stress symptoms were assessed using a single-item instrument proposed by Elo et al. (2003). The item was 'Stress means a situation in which a person feels tense, restless, nervous or anxious or cannot sleep at night because his/her mind is always troubled. Do you feel this kind of stress today?' (1 = not stressed at all; 5 = totally stressed).

Daily attention difficulty was measured using item no. 18 of the *Five Facet Mindfulness Questionnaire* (FFMQ—Baer et al., 2008), translated and validated in Spanish by Coo and Salanova (2016). The item was 'I find it challenging to stay focused on what is happening in the present moment (1 = not challenging to stay focused at all; 5 = complicated to stay focused).

Data analysis

We followed the procedure proposed by Bliese and Ployhart (2002) and Ruiz et al. (2010) for each dependent variable. The relationship between the fixed effects of the time factor and the dependent variable was then modeled using a linear function, progressing to quadratic and cubic relationships by including power polynomials. Next, interaction terms between the time factor and the group were added to the model for each type of function. The assumptions adopted were tested using an intention-to-treat (ITT) analysis using growth curves in a multilevel statistical model.

To simplify the statistical process, given the presence of three intervention groups, we included these factors based on a paired comparison procedure, correcting for bias where more than one significant effect was found using the Holm-Bonferroni sequential method (Holm, 1979). The adjustment degree for each model was calculated based on a computation of deviance (-2LL), the Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC). The hierarchical structure of the multilevel models calculated includes the time factor as level 1, nested in the participants, and the group factor as level 2. The hypotheses were tested by analysis of the simple gradients for those interactions found to be significant (Preacher et al., 2006), which allowed us to evaluate the effects of each treatment independently over time.

Results

Descriptive analysis and socio-demographic comparison of variables at baseline are presented in Table 3.

Insert here Table 3

Daily perceived fatigue

Tables 3 and 4 show the results of the analysis of growth curves for each dependent variable, revealing a significant interaction group x time (linear function) in the comparison of the MF-CG. The simple gradients analysis for this interaction shows significant effects in the MF group (b = -.03; se = .01; t = -4.30; p < .01), while the CG does not display any differential effects of this magnitude (b = -.01; se = .01; t = -.11; p = .99). Hence, *Hypothesis 1a* was supported. On the part of the PE, significant group x time interaction (linear function) is found in the comparison PE-CG. Moreover, analysis of the simple gradient effects reveals one significant result in the PE group (b = -.02; se = .01; t = -3.30; p = .01), but there are none in the CG group (b = -.01; se = .01; t = -0.23; p = .82). As such, *Hypothesis 1b* was also supported (see Table 4 and Figure 1).

Insert about here Table 4 and Figure 1

Daily psychological detachment

According to the hypotheses for the psychological detachment variable, results exhibit a significant interaction group x time (cubic function) in the comparison of the MF-CG group. Analysis of the simple gradients shows one significant effect in the MF group (b = 0.01; se = 0.01; t = 2.00; p = .04) but none in the CG group (b = 0.01; se = 0.01; t = -0.46; p = .64). Thus, *Hypothesis 2a* was supported. Related to PE, a significant interaction group x time (quadratic function) in the PE-CG comparison (b = -4.56; se = 1.98; t = -2.30; p = .02, 95% CI (-8.44, -0.67) is found. However, the analysis of the simple gradient shows no significant effects in either the PE (b = -0.01; se = 0.01; t = -0.87; p = .39) or CG group (b = 0.01; se = 0.01; t = -0.74; p = .46). Nevertheless, we can confirm that *Hypothesis 2b* was supported (see Table 4 and Figure 1).

Daily sleep quality

Adjustment of the growth curves model for the sleep quality variable in the interaction terms produced details comparing the PE-CG with the linear function. The simple gradients analysis

displays one significant effect in the PE group (b = 0.02; se = 0.01; t = 2.26; p = .0), while the CG group does not display any differential effects (b = -0.01; se = 0.01; t = -1.16; p = .25). No statistically significant differences were found in the comparison MF-CG. Accordingly, *Hypothesis 3a* was rejected, and *Hypothesis 3b* was supported (see Table 4 and Figure 1).

***Daily stress* symptoms**

To test the hypothesis regarding changes in daily stress symptoms, we opted to hold back the linear trajectory to analyze the simple effects because the time factor slope in the linear trajectory was found to progress through the previous models significantly. In this regard, the MF group displays significant effects over time (b = -0.03; se = 0.01; t = -4.11; p < .01), but the CG group does not (b = -0.01; se = 0.01; t = -0.66; p = .51). The final adjusted model exhibits significant effects for the interaction terms in the MF-CG comparison with the linear function and quadratic function. Thus, *Hypothesis 4a* was supported. On the part of PE significant interaction effects are found in the PE-CG comparison with the linear trajectory. The simple gradients analysis for this interaction shows significant effects in the PE group (b = -0.04; se = 0.01; t = -6.35; p < .01), while the CG group does not display any differential effects (b = -0.01; se = 0.01; t = -0.80; p = .42). These findings support *Hypothesis 4b* (see Table 5 and Figure 1).

Insert about here Table 5

Daily attention difficulty

Results were found to be significant interaction group x time (linear and quadratic function) in the MF-CG comparison. The MF group displays significant simple gradients effects (b = -.03; se = .01; t = -3.83; p < .01), but CG group does not (b = -.01; se = .01; t = -0.77; p = .44). For this reason, *Hypothesis 5a* was supported. Regarding PE, results were significant interaction group x time (linear and quadratic function) PE-CG comparison. Significant simple gradients effects were

also found in the PE group (b = -.03; se = .01; t = -4.18; p < .01), but there are none in the CG group (b = -.01; se = .01; t = -0.83; p = .40). As such, *Hypothesis 5b* was also supported (see Table 5 and Figure 1). A summary of hypothesis confirmation is shown in Table 6.

Insert about here Table 6

Discussion

Given the importance of recovery as a prevention mechanism for mental health and the few studies that analyze internal recovery during the lunch break, we conducted a three-arm RCT with 22 daily measures to observe the effects on recovery of only 15-30 minutes of daily PE or MF practice before lunch. The results suggest that both activities may be effective concerning the daily reduction of perceived fatigue, stress symptoms, and attention difficulty and as a means of increasing psychological detachment. There were only different results regarding the effects on sleep quality, which were only caused by PE but not by MF. Therefore, all our hypotheses are confirmed, except for MF and sleep quality, as we will see below.

Theoretical implications

Our results are in line with previous studies that observed that training in MF and PE might improve global mental health, including providing adaptive responses to stress (Baer et al., 2012; Chong et al., 2020; De Bruin et al., 2016; Edward & Loprizi, 2018; Goldstein et al., 2020; Van der Zwan et al., 2015). Furthermore, we have observed that there are more similarities than differences in terms of the effects of the practices, even though one consists of an eminently cognitive practice (MF) and the other an eminently physical practice (PE). This could be attributed to specific common mechanisms, as we will see below.

Previous empirical literature postulates that MF shares mechanisms with PE that influence health (Demarzo et al., 2014; Goldin et al., 2012; Goldstein et al., 2018; Zgierska et al., 2013). Regarding the specific positive effects generated through MF or PE for internal work recovery, we consider that some shared mechanisms equally justify them.

First, we agree with Bosh et al. (2018) that considering that the activity is carried out within the working day and at the company facilities (or surroundings), it may be more difficult for workers to eliminate or reduce the mental demand of work tasks required for a successful recovery. According to the Effort-Recovery Model (Meijman & Mulder, 1998), it might seem that the non-separation in place and time would impair the necessary division between the moment of effort and that of recovery. However, following our results, it appears that with only 15-30 minutes of recovery activity, even during the working day and at the workplace, the mental distancing mechanism is effectively activated, which is in line with other similar works on disconnection (e. g. Chong et al., 2020; Edwards & Loprizi, 2018; Feuerhahn et al., 2014; Hülsheger & Lang, 2014; Van Hooff et al., 2019).

Secondly, both activities activate specific physiological processes that, although different, may cause similar results in work recovery. According to Edward & Loprici (2018), a physiological activation with PE revitalizes in the medium and long term, as opposed to increasing fatigue. For their part, MF practitioners tend to have a greater awareness of what they are doing and how their body responds, that is, a better self-regulation process that can result in possible better management of energies and, consequently, a lower level of fatigue (Hölzel et al., 2011). In this regard, our findings are consistent both with the existing literature on the positive effects of PE as a means of reducing fatigue (Bretland & Thorsteinsson, 2015) and with studies on the positive effects of MF on fatigue (e.g., Rook & Zijlstra, 2006; Trougakos et al., 2014).

Finally, following the line of scholars like Wang and Boros (2019), significant improvement with PE is confirmed concerning sleep quality, but this is not the case with MF. Previous literature states that MF can indeed help improve certain aspects of sleep (Hülsheger et al., 2018; Ong et al., 2012; and Rusch et al., 2019). We do not know the specific reasons as to why we did not obtain significant results in our study with MF. It could be that the effects of a relatively short meditation, performed in the middle of the day (and not in the afternoon as in most previous studies) and in the workplace, may not have strong enough effects to last until the evening in people who have just learned to meditate. In any case, it is essential to emphasize that the fact that MF did not significantly improve sleep quality did not affect the other outcome variables improving significantly in the MF group, given the possible relationship between sleep and fatigue, attention, or stress.

Practical implications

Our findings have several practical implications for research on activities for recovery during lunch breaks. Following the *recovery paradox* of Sabine Sonnentag (2018), our findings may help, first, with the need to distinguish between the activities that are effective in work settings from those that are not, and second, to know what are the main conditions that will help to make the practice possible and efficient. Indeed, we can confirm that practicing a small amount of activity during the lunch break is possible through the combined efforts of both the company and the employee. Undoubtedly, an active employee's characteristics are relevant but sometimes they require more support from the employer (Alcover, 2019). Excessive workload or rigidity concerning break duration negatively affect the worker's ability to take a healthy break. If the company provides the employee with some autonomy to manage their working day, that may facilitate the practice of recovery activities and their consequent effects.

Given that this study proposes not an organizational intervention guided by instructors over a period of time but instead continued and self-managed practice by the worker, it would be convenient for the company to provide a "quiet room" in the workplace for MF and a space to exercise. If the office does not have the possibility of a room to exercise with showers, the option of changing the PE for physical activity, such as climbing stairs or walking at a fast pace in a park, could be considered. Observing the effects of aerobic PE versus physical activity performed during the lunch break would be very interesting. For cases of remote work, it would be sufficient to use videos/audio that are freely available on the internet to meditate or exercise at home.

We know that this time is usually reduced to 45-60 minutes in mostworkplaces. In these cases, the practice should also be suitably reduced. A shorter practice's effects will not significantly change if practiced at least 3 or 4 days a week. It is more important to maintain the frequency of practice than to increase the amount of time spent on it (Amaro-Gahete et al., 2020).

Limitations and implications for future research

This study has some limitations that could be addressed in future research. The data in this study are from self-reported evaluation measures, subject to biases such as social desirability. Regarding the sample, our workers were exclusively Caucasian, well-educated, and relatively healthy physically and psychologically, which limits the generalizability of the results. Regarding measures, we did not register whether the activity performed was the preferred one. For this reason, combining the rigor of an RCT framework with workers' choices as another dependent variable would allow us to know whether choice makes a significant difference. Secondly, future research should also include studies of mediation and moderation between daily variables. For example, improved sleep quality could explain any reduction in daily fatigue levels.

Similarly, a decrease in daily stress symptoms could be mediated by increased psychological detachment during lunchtime and better attention during the working day due to better sleep quality.

Third, we also suggest researching the comparative effects of MF and PE both at the office and remotely. It is interesting to know if psychological detachment from work may be more difficult in the case of remote working or working from home than from the office (Toniolo-Barrios & Pitt, 2021). It will be interesting to compare the practice of MF and PE with other similar activities during the lunch break, such as napping, yoga, and walks in the park.

To sum up, recuperation strategy research still faces a fair number of challenges, particularly given the likely changes in working practices in the post-COVID world. Whatever the future of work settings, this study underscores the need for work breaks and a realignment of this right with changing working conditions in the XXI century.

Data availability statement:

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Conflicts of Interest:

The authors declare no conflict of interest.

References

Alcover, C. M. (2019). Recuperación del trabajo y del estrés laboral, bienes- tar psicosocial y salud ocupacional [Job and work stress recovery, psychosocial well-being, and occupational health]. In J. A. Moriano, G. Topa, & C. García-Ael (Eds.), *Psicología aplicada a la prevención de riesgos*

laborales (pp. 285–322). Sanz & Torres.

Amaro-Gahete, F. J., Acosta, F. M., Migueles, J. H., Ponce González, J. G., & Ruiz, J. R. (2020). Association of sedentary and physical activity time with maximal fat oxidation during exercise in sedentary adults. *Scandinavian Journal of Medicine & Science in Sports, 30*(9), 1605–1614. https://doi.org/10.1111/sms.13696

Archer, T., Fredriksson, A., Schütz, E., & Kostrzewa, R. M. (2011). Influence of physical exercise on neuroimmunological functioning and health: Aging and stress. *Neurotoxicity Research, 20*(1), 69–83. https://doi.org/10.1007/s12640-010-9224-9

Baer, R. A., Carmody, J., & Hunsinger, M. (2012). Weekly change in mind- fulness and perceived stress in a mindfulness-based stress reduction program. *Journal of Clinical Psychology, 68*(7), 755–765. https://doi.org/10.1002/jclp.21865

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., Williams, J. M. G., Duggan, D., & Williams, J. M. G. (2008). Construct validity of the five-facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329–342. https://doi.org/10.1177/1073191107313003

Bartlett, L., Martin, A., Neil, A. L., Memish, K., Otahal, P., Kilpatrick, M., & Sanderson, K. (2019). A systematic review and meta-analysis of work- place mindfulness training randomized controlled trials. *Journal of Occupational Health Psychology, 24*(1), 108–126. https://doi.org/10.1037/ocp0000146

Bennett, A. A., Bakker, A. B., & Field, J. G. (2018). Recovery from work-related effort: A meta-analysis. *Journal of Organizational Behavior, 39*(3), 262– 275. https://doi.org/10.1002/job.2217

Bennett, A. A., Gabriel, A. S., & Calderwood, C. (2020). Examining the inter- play of micro-break durations and activities for employee recovery: A mixed-methods investigation. *Journal of Occupational Health Psychology, 25*(2), 126–142. https://doi.org/10.1037/ocp0000168

Bláfoss, R., Sundstrup, E., Jakobsen, M. D., Brandt, M., Bay, H., & Andersen, L. L. (2019). Physical

workload and bodily fatigue after work: Cross-sectional study among 5000 workers. *European Journal of Public Health, 29*(5), 837–842. https://doi.org/10.1093/eurpub/ckz055

Bliese, P. D., & Ployhart, R. E. (2002). Growth modeling using random coefficient models: Model building, testing, and illustrations. *Organizational Research Methods, 5*(4), 362–387. https://doi.org/10.1177/109442802237116

Bordado Sköld, M., Bayattork, M., Andersen, L. L., & Schlünssen, V. (2019). Psychosocial effects of workplace exercise - a systematic review. *Scandinavian Journal of Work, Environment & Health, 45*(6), 533–545. https://doi.org/10.5271/sjweh.3832

Bosch, C., Sonnentag, S., & Pinck, A. S. (2018). What makes for a good break? A diary study on recovery experiences during lunch break. *Journal of Occupational and Organizational Psychology, 91*(1), 134–157. https://doi.org/10.1111/joop.12195

Bramante, C. T., King, M. M., Story, M., Whitt–glover, M. C., & Barr–anderson, D. J. (2018). Worksite physical activity breaks: Perspectives on feasibility of implementation. *Work, 59*(4), 491–499. https://doi.org/10.3233/WOR–182704

Bretland, R. J., & Thorsteinsson, E. B. (2015). Reducing workplace burnout: The relative benefits of cardiovascular and resistance exercise. *PeerJ* [Internet], 3, e891. https://doi.org/10.7717/peerj.891

Brown, D., Barton, J., Pretty, J., & Gladwell, V. (2012). Walks4work: Rationale and study design to investigate walking at lunchtime in the workplace setting. *BMC Public Health, 12*(1). https://doi.org/10.1186/1471-2458-12-550

Buysse, D. J., Reynolds, C. F., III, Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh sleep quality index: A new instrument for psy- chiatric practice and research. *Psychiatry Research, 28*(2), 193–213. https://doi.org/10.1016/0165-17818990047-4

Calderwood, C., Gabriel, A. S., Ten Brummelhuis, L. L., Rosen, C. C., & Rost, E. A. (2020). Understanding the relationship between prior to end-of-work- day physical activity and work–life balance: A within-person approach. *The Journal of Applied Psychology, 106*(8), 1239.

https://doi.org/10.1037/apl0000829

Choi, E., Gruman, J. A., & Leonard, C. M. (2022). A balanced view of mind- fulness at work. *Organizational Psychology Review, 12*(1), 35–72. https://doi.org/10.1177/20413866211036930

Chomistek, A. K., Yuan, C., Matthews, C. E., Troiano, R. P., Bowles, H. R., Rood, J., Barnett, J. B., Willett, W. C., Rimm, E. B., & Bassett, D. R., Jr. (2017). Physical Activity Assessment with the ActiGraph GT3X and Doubly Labeled Water. *Medicine and Science in Sports and Exercise, 49*(9), 1935– 1944. https://doi.org/10.1249/MSS.0000000000001299

Chong, S., Kim, Y. J., Lee, H. W., Johnson, R. E., & Lin, S. H. J.S. H. (. (2020). Mind your own break! The interactive effect of workday respite activities and mindfulness on employee outcomes via affective linkages. *Organizational Behavior and Human Decision Processes, 159*, 64–77. https://doi.org/10.1016/j.obhdp.2019.11.001

Conn, V. S., Hafdahl, A. R., Cooper, P. S., Brown, L. M., & Lusk, S. L. (2009). Meta-analysis of workplace physical activity interventions. *American Journal of Preventive Medicine, 37*(4), 330–339. https://doi.org/10.1016/j.amepre.2009.06.008

Coo Calcagni, C., & Salanova, M. (2016). Validación española de la escala abreviada Five Facet Mindfulness Questionnaire (FFMQ): Un estudio piloto. *Àgora de salut*, (3), 103–110. http://dx.doi.org/10.6035/AgoraSalut.2016.3.11

Cropley, M., Dijk, D. J., & Stanley, N. (2006). Job strain, work rumination, and sleep in school teachers. *European Journal of Work and Organizational Psychology, 15*(2), 181–196. https://doi.org/10.1080/13594320500513913

Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine, 65*, 564–570. https://doi.org/10.1097/01.psy.0000077505.67574.e3

De Bloom, J., Geurts, S. A., Sonnentag, S., Taris, T., de Weerth, C., & Kompier, M. A. (2011). How does a vacation from work affect employee health and well-being? *Psychology and Health, 26*(12), 1606–

1622. https://doi.org/10.1080/08870446.2010.546860

De Bloom, J., Kinnunen, U., & Korpela, K. (2014). Exposure to nature versus relaxation during lunch breaks and recovery from work: Development and design of an intervention study to improve workers' health, well- being, work performance and creativity. *BMC Public Health, 14*(1), 1–15. https://doi.org/10.1186/1471-2458-14-488

De Bruin, E. I., van der Zwan, J. E., & Bogels, S. M. (2016). A RCT comparing daily mindfulness meditations, biofeedback exercises, and daily physical exercise on attention control, executive functioning, mindful awareness, self-compassion, and worrying in stressed young adults. *Mindfulness, 7*(5), 1182–1192. https://doi.org/10.1007/s12671-016-0561-5

Demarzo, M. M., Montero-Marin, J., Stein, P. K., Cebolla, A., Provinciale, J. G., & Garcãa-Campayo, J. (2014). Mindfulness may both moderate and mediate the effect of physical fitness on cardiovascular responses to stress: A speculative hypothesis. *Frontiers in Physiology, 5*, 105. https://doi.org/10.3389/fphys.2014.00105/full

Demerouti, E., Bakker, A. B., Geurts, S. A. E., & Taris, A. W. (2009). Daily recovery from work-related effort during non-work time. In S. Sonnnentag, P. L. Perrewé, & D. C. Ganster (Eds.), *Current perspectives on job-stress recovery* (Vol. 7, pp. 85–124). JAI Press.

Díaz-Silveira, C., Alcover, C. M., Burgos, F., Marcos, A., & Santed, M. A. (2020). Mindfulness versus physical exercise: Effects of two recovery strategies on mental health, stress and immunoglobulin a during lunch breaks. A randomized controlled trial. *International Journal of Environmental Research and Public Health, 17*(8), 2839. https://doi.org/10.3390/ijerph17082839

Edwards, M. K., & Loprinzi, P. D. (2019). Affective responses to acute bouts of aerobic exercise, mindfulness meditation, and combinations of exercise and meditation: A randomized controlled intervention. *Psychological Reports, 122*(2), 465–484. https://doi.org/10.1177/0033294118755099

Elo, A. L., Leppänen, A., & Jahkola, A. (2003). Validity of a single-item measure of stress symptoms. Scandinavian *Journal of Work, Environment & Health, 29*(6), 444–451.

https://doi.org/10.5271/sjweh.752

Feuerhahn, N., Sonnentag, S., & Woll, A. (2014). Exercise after work, psycho- logical mediators, and affect: A day-level study. *European Journal of Work and Organizational Psychology, 23*(1), 62–79. https://doi.org/10.1080/1359432X.2012.709965

Fisher, G. G., Matthews, R. A., & Gibbons, A. M. (2016). Developing and investigating the use of single-item measures in organizational research. *Journal of Occupational Health Psychology, 21*(1), 3–23. https://doi.org/10.1037/a0039139

Goldin, P., Ziv, M., Jazaieri, H., & Gross, J. (2012). Randomized controlled trial of mindfulness-based stress reduction versus aerobic exercise: Effects on the self-referential brain network in social anxiety disorder. *Frontiers in Human Neuroscience, 6*, 295. https://doi.org/10.3389/fnhum.2012.00295

Goldstein, E., Topitzes, J., Brown, R. L., & Barrett, B. (2020). Mediational pathways of meditation and exercise on mental health and perceived stress: A randomized controlled trial. *Journal of Health Psychology, 25* (12), 1816–1830. https://doi.org/10.1177/1359105318772608

Holm, S. (1979). A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics, 6*(2), 65–70. https://www.jstor.org/stable/4615733

Hölzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science, 6*(6), 537–559. https://doi.org/10.1177/1745691611419671

Hoover, C. S., Ragsdale, J. M., & Ayres, T. B. (2022). An experimental test of resource recovery from physical and relaxation work break activities. *Stress and Health, 38*(3), 477–489. https://doi.org/10.1002/smi.3108

Houdmont, J., Jachens, L., Randall, R., Hopson, S., Nuttall, S., & Pamia, S. (2019). What does a single-item measure of job stressfulness assess? *International Journal of Environmental Research and Public Health, 16*(9), 1480. https://doi.org/10.3390/ijerph16091480

Hülsheger, U. R., Lang, J. W., Depenbrock, F., Fehrmann, C., Zijlstra, F. R., & Alberts, H. J. (2014). The power of presence: The role of mindfulness at work for daily levels and change trajectories of psychological detach- ment and sleep quality. *The Journal of Applied Psychology, 99*(6), 1113. https://doi.org/10.1037/a0037702

Hülsheger, U. R., Walkowiak, A., & Thommes, M. S. (2018). How can mind- fulness be promoted? Workload and recovery experiences as antecedents of daily fluctuations in mindfulness. *Journal of Occupational and Organizational Psychology, 91*(2), 261–284. https://doi.org/10.1111/joop.12206

Hunter, E. M., & Wu, C. (2016). Give me a better break: Choosing workday break activities to maximize resource recovery. *The Journal of Applied Psychology, 101*(2), 302–311. https://doi.org/10.1037/apl0000045

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your mind to face stress, pain, and illness*. Bantam Doubleday Dell.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice, 10*(2), 144–156. https://doi.org/10.1093/clipsy.bpg016

Karabinski, T., Haun, V. C., Nübold, A., Wendsche, J., & Wegge, J. (2021). Interventions for improving psychological detachment from work: A meta-analysis. *Journal of Occupational Health Psychology, 26*(3), 224– 242. https://doi.org/10.1037/ocp0000280

Kettunen, O., Vuorimaa, T., & Vasankari, T. (2015). A 12-month exercise intervention decreased stress symptoms and increased mental resources among working adults-results perceived after a 12-month follow-up. *International Journal of Occupational Medicine and Environmental Health, 28*(1), 157–168. https://doi.org/10.13075/ijomeh.1896.00263

Krajewski, J., Wieland, R., & Sauerland, M. (2010). Regulating strain states by using the recovery potential of lunch breaks. *Journal of Occupational Health Psychology, 15*(2), 131–139. https://doi.org/10.1037/a0018830

Kredlow, M., Capozzoli, M. C., Hearon, B. A., Calkins, A. Q., & Otto, M. W. (2015). The effects of physical

activity on sleep: A meta-analytic review. *Journal of Behavior Medicine, 38*(3), 427–449. https://doi.org/10.1007/s10865-015-9617-6

Kudesia, R. S., Pandey, A., & Reina, C. S. Doing more with less: Interactive effects of cognative resources and mindfulness training in coping with mental fatigue from multi-tasking. (2020). *Journal of Management, 48*(2), 410–439. Advance online publication https://doi.org/10.1177/0149206320964570

Lomas, T., Medina, J. C., Ivtzan, I., Rupprecht, S., Hart, R., & Eiroa-Orosa, F. J. (2017). The impact of mindfulness on well-being and performance in the workplace: An inclusive systematic review of the empirical literature. *European Journal of Work and Organizational Psychology, 26*(4), 492–513. https://doi.org/10.1080/1359432X.2017.1308924

Malina, R. M. (1996). Tracking of physical activity and physical fitness across the lifespan. *Research Quarterly for Exercise and Sport, 67*(sup3), 48. https://doi.org/10.1080/02701367.1996.10608853

McMorris, T., Barwood, M., Hale, B. J., Dicks, M., & Corbett, J. (2018). Cognitive fatigue effects on physical performance: A systematic review and meta-analysis. *Physiology and Behavior, 188*, 103–107. https://doi.org/10.1016/j.physbeh.2018.01.029

Meijman, T. F., & Mulder, G. (1998). Psychological Aspects of Workload. In P. J. D. Drenth, H. Thierry, & C. J. de Wolff (Eds.), *Handbook of Work and Organizational Psychology* (2nd ed., Vol. 2, pp. 5–33). Psychology Press.

Michel, A., Groß, C., Hoppe, A., González-Morales, M. G., Steidle, A., & O'Shea, D. (2021). Mindfulness and positive activities at work: Intervention effects on motivation-related constructs, sleep quality, and fatigue. *Journal of Occupational and Organizational Psychology, 94*(2), 309–337. https://doi.org/10.1111/joop.12345

Michishita, R., Jiang, Y., Ariyoshi, D., Yoshida, M., Moriyama, H., Obata, Y., Nagata, M., Nagata, T., Mori, K., & Yamato, H. (2017). The introduction of an active rest program by workplace units improved the workplace vigor and presenteeism among workers: A randomized controlled trial. *Journal of*

Occupational and Environmental Medicine, 59(12), 1140– 1147. https://doi.org/10.1097/JOM.0000000000001121

Michishita, R., Jiang, Y., Ariyoshi, D., Yoshida, M., Moriyama, H., & Yamato, H. (2017). The practice of active rest by workplace units improves personal relationships, mental health, and physical activity among workers. *Journal of Occupational Health, 59*(2), 122–130. https://doi.org/10.1539/joh.160182-OA

Milton, K., Cavill, N., Chalkley, A., Foster, C., Gomersall, S., Hagstromer, M., Kelly, P., Kolbe–alexander, T., Mair, J., McLaughlin, M., Nobles, J., Reece, L., Shilton, T., Smith, B. J., & Schipperijn, J. (2021). Eight investments that work for physical activity. *Journal of Physical Activity Health, 18*(6), 625– 630. https://doi.org/10.1123/jpah.2021–0112

Nägel, I. J., & Sonnentag, S. (2013). Exercise and sleep predict personal resources in employees' daily lives. *Applied Psychology Health and Well- Being, 5*(3), 348–368. https://doi.org/10.1111/aphw.12014

Oerlemans, W. G., Bakker, A. B., & Demerouti, E. (2014). How feeling happy during off-job activities helps successful recovery from work: A day reconstruction study. *Work and Stress, 28*(2), 198–216. https://doi.org/10.1080/02678373.2014.901993

Ong, J. C., Ulmer, C. S., & Manber, R. (2012). Improving sleep with mind- fulness and acceptance: A metacognitive model of insomnia. *Behaviour Research and Therapy, 50*(11), 651–660. https://doi.org/10.1016/j.brat.2012.08.001

O'Shea, D., O'Connell, B. H., & Gallagher, S. (2016). Randomised controlled trials in WOHP interventions: A review and guidelines for use. *Applied Psychology, 65*(2), 190–222. https://doi.org/10.1111/apps.12053

Pontifex, M. B., Hillman, C. H., Fernhall, B. O., Thompson, K. M., & Valentini, T. A. (2009). The effect of acute aerobic and resistance exercise on working memory. *Medicine and Science in Sports & Exercise, 41*(4), 927–934. https://doi.org/10.1249/MSS.0b013e3181907d69

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple

linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*(4), 437–448. https://doi.org/10.3102/10769986031004437

Querstret, D., & Cropley, M. (2012). Exploring the relationship between work-related rumination, sleep quality, and work-related fatigue. *Journal of Occupational Health Psychology, 17*(3), 341. https://doi.org/10.1037/a0028552

Rhee, H., & Kim, S. (2016). Effects of breaks on regaining vitality at work: An empirical comparison of 'conventional'and 'smart phone'breaks. *Computers in Human Behavior, 57*, 160–167. https://doi.org/10.1016/jchb.2015.11.056

Richardson, K., & Rothstein, H. E. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychology, 13*(1), 69–93. https://doi.org/10.1037/1076-8998.13.1.69

Riedl, E. M., Müller, A., Perzl, J., & Thomas, J. (2023). Live-streaming Activity and Relaxation Breaks: A (Home-)Office-Compatible Approach to Promote Break Recovery, Mood, and Attention?. *Occupational Health Science*, 1–25. Advance online publication.

Rook, J. W., & Zijlstra, F. R. (2006). The contribution of various types of activities to recovery. *European Journal of Work and Organizational Psychology, 15*(2), 218–240. https://doi.org/10.1080/13594320500513962

Ruiz, M. A., Pardo, A., & San Martín, R. (2010). Structural equation models. *Papeles del psicólogo, 31*(1), 34–45.

Rusch, H. L., Rosario, M., Levison, L. M., Olivera, A., Livingston, W. S., Wu, T., & Gill, J. M. (2019). The effect of mindfulness meditation on sleep quality: A systematic review and meta–analysis of randomized controlled trials. *Annals of the New York Academy of Sciences, 1445*(1), 5–16. https://doi.org/10.1111/nyas.13996

Santos, H. G., Chiavegato, L. D., Valentim, D. P., & Padula, R. S. (2020). Effectiveness of a progressive resistance exercise program for industrial workers during breaks on perceived fatigue control: A

cluster rando- mized controlled trial. *BMC Public Health, 20*(1), 849. https://doi.org/10.1186/s12889-020-08994-x

Scharf, C., & Tilp, M. (2023). Twelve weeks of web-based low to moderate physical activity breaks with coordinative exercises at the workplace increase motor skills but not motor abilities in office workers—A rando- mised controlled pilot study. *International Journal of Environmental Research and Public Health, 20*(3), 2193. https://doi.org/10.3390/ijerph20032193

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: Psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology, 1*(1), 607–628. https://doi.org/10.1146/annurev.clinpsy.1.102803.144141

Sianoja, M., Kinnunen, U., de Bloom, J., Korpela, K., & Geurts, S. (2016). Recovery during Lunch Breaks: Testing Long-Term Relations with Energy Levels at Work. *Scandinavian Journal of Work and Organizational Psychology, 1*(1), 1–12. http://dx.doi.org/10.16993/sjwop.13

Sianoja, M., Syrek, C. J., de Bloom, J., Korpela, K., & Kinnunen, U. (2018). Enhancing daily well-being at work through lunchtime park walks and relaxation exercises: Recovery experiences as mediators. *Journal of Occupational Health Psychology, 23*(3), 428. https://doi.org/10.1037/ocp0000083

Skarpsno, E. S., Nilsen, T. I. L., Sand, T., Hagen, K., & Mork, P. J. (2020). Work- related mental fatigue, physical activity and risk of insomnia symptoms: Longitudinal data from the Norwegian HUNT study. *Behavioral Sleep Medicine, 18*(4), 488–499. https://doi.org/10.1080/15402002.2019.1614927

Sonnentag, S. (2018). The recovery paradox: Portraying the complex inter- play between job stressors, lack of recovery, and poor well-being. *Research in Organizational Behavior, 38*, 169–185. https://doi.org/10.1016/j.riob.2018.11.002

Sonnentag, S., Arbeus, H., Mahn, C., & Fritz, C. (2014). Exhaustion and lack of psychological detachment from work during off-job time: Moderator effects of time pressure and leisure experiences. *Journal of Occupational Health Psychology, 19*(2), 206–216. https://doi.org/10.1037/a0035760

Sonnentag, S., & Binnewies, C. (2013). Daily affect spillover from work to home: Detachment from work

and sleep as moderators. *Journal of Vocational Behavior, 83*(2), 198–208. https://doi.org/10.1016/j.jvb.2013.03.008

Sonnentag, S., & Fritz, C. (2007). The recovery experience questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology, 12*(3), 204–221. https://doi.org/10.1037/1076-8998.12.3.204

Sonnentag, S., & Fritz, C. (2015). Recovery from job stress: The stressor- detachment model as an integrative framework. *Journal of Organizational Behavior, 36*(S1), S72–103. https://doi.org/10.1002/job.1924

Sonnentag, S., & Geurts, S. A. E. (2009). Methodological issues in recovery research. In S. Sonnentag, P. L. Perrewé, & D. C. Ganster (Eds.), Current perspectives on job-stress recovery (research in occupational stress and well being (Vol. 7, pp. 1–36). Emerald. https://doi.org/10.1108/S1479-3555(2009)0000007004

Sonnentag, S., Mojza, E. J., Binnewies, C., & Scholl, A. (2008). Being engaged at work and detached at home: A week-level study on work engage- ment, psychological detachment, and affect. *Work & Stress, 22*(3), 257– 276. https://doi.org/10.1080/02678370802379440

Toniolo-Barrios, M., & Pitt, L. (2021). Mindfulness and the challenges of working from home in times of crisis. *Business Horizons, 64*(2), 189–197. https://doi.org/10.1016/j.bushor.2020.09.004

Trougakos, J. P., Hideg, I., Cheng, B. H., & Beal, D. J. (2014). Lunch breaks unpacked: The role of autonomy as a moderator of recovery during lunch. *Academy of Management Journal, 57*(2), 405–421. https://doi.org/10.5465/amj.2011.1072

Van Der Zwan, J. E., De Vente, W., Huizink, A. C., Bögels, S. M., & De Bruin, E. I. (2015). Physical activity, mindfulness meditation, or heart rate variability biofeedback for stress reduction: A randomized controlled trial. *Applied Psychophysiology and Biofeedback, 40*(4), 257–268. https://doi.org/10.1007/s10484-015-9293-x

Van Eerd, D., Munhall, C., Irvin, E., Rempel, D., Brewer, S., van der Beek, A. J., Dennerlein, J. T., Tullar,

J., Skivington, K., Pinion, C., & Amick, B. (2016). Effectiveness of workplace interventions in the prevention of upper extremity musculoskeletal disorders and symptoms: An update of the evidence. *Occupational and Environmental Medicine, 73*(1), 62–70. https://doi.org/10.1136/oemed-2015102992

Van Hooff, M. L. M., Benthem de Grave, R. M., & Geurts, S. A. E. (2019). No pain, no gain? Recovery and strenuousness of physical activity. *Journal of Occupational Health Psychology, 24*(5), 499–511. https://doi.org/10.1037/ocp0000141

Van Hooff, M. L., Geurts, S. A., Kompier, M. A., & Taris, B. T. W. (2007). "How fatigued do you currently feel?" Convergent and discriminant validity of a single-item fatigue measure. *Journal of Occupational Health Psychology, 49*(3), 224–234. https://doi.org/10.1539/joh.49.224

Vella, S. A., Aidman, E., Teychenne, M., Smith, J. J., Swann, C., Rosenbaum, S., Lubans, D. R., & Lubans, D. R. (2023). Optimising the effects of physical activity on mental health and well-being: A joint consensus statement from sports medicine Australia and the Australian psychological society. *Journal of Science and Medicine in Sport, 26*(2), (in press) https://doi.org/10.1016/j.jsams.2023.01.001

Virtanen, M., Myllyntausta, S., Ervasti, J., Oksanen, T., Salo, P., Pentti, J., Kivimäki, M., Ropponen, A., Halonen, J. I., Vahtera, J., & Stenholm, S. (2021). Shift work, work time control, and informal caregiving as risk factors for sleep disturbances in an ageing municipal workforce. *Scandinavian Journal of Work, Environment & Health, 47*(3), 181. https://doi.org/10.5271/sjweh.3937

Vonderlin, R., Biermann, M., Bohus, M., & Lyssenko, L. (2020). Mindfulness- based programs in the workplace: A meta-analysis of randomized con- trolled trials. *Mindfulness, 11*(7), 1579–1598. https://doi.org/10.1007/s12671-020-01328-3

Voss, M. W., Erickson, K. I., Prakash, R. S., Chaddock, L., Kim, J. S., Alves, H., Szabo, A., Phillips, S. M., Wójcicki, T. R., Mailey, E. L., Olson, E. A., Gothe, N., Vieira-Potter, V. J., Martin, S. A., Pence, B. D., Cook, M. D., Woods, J. A., McAuley, E., & Kramer, A. F. (2013). Neurobiological markers of exercise- related brain plasticity in older adults. *Brain Behavior and Immunity, 28*, 90–99.

https://doi.org/10.1016/j.bbi.2012.10.021

Wang, F., & Boros, S. (2019). The relationship between physical activity, stress, life satisfaction and sleep quality. *Journal of Physical Education and Sport, 19*(1), 227–234. https://doi.org/10.7752/jpes.2019.s1034

WHO. (2018). *Global action plan on physical activity 2018–2030: More active people for a healthier world*. World Health Organization.

Wolever, R. Q., Bobinet, K. J., McCabe, K., Mackenzie, E. R., Fekete, E., Kusnick, C. A., & Baime, M. (2012). Effective and viable mind-body stress reduction in the workplace: A randomized controlled trial. *Journal of Occupational Health Psychology, 17*(2), 246–258. https://doi.org/10.1037/a0027278

Zgierska, A., Obasi, C. N., Brown, R., Ewers, T., Muller, D., Gassman, M., Barlow, S., & Barrett, B. (2013). Randomized controlled trial of mindfulness meditation and exercise for the prevention of acute respiratory infection: Possible mechanisms of action. *Evidence-Based Complementary and Alternative Medicine*, [952716]. https://doi.org/10.1155/2013/952716

Table 1. *Schedule and description of mindfulness and physical exercises.*

WEEK	TOTAL LENGTH	MINDFULNESS* (sitting meditation)	PHYSICAL EXERCISE (outdoor/indoor cardio exercise)
1	15 min.	Breathing.	Warm-up, cardiovascular exercise* & stretching.
2	20 min.	Breathing and body sensations.	Warm-up, cardiovascular exercise* & stretching.
3	25 min.	Breathing, body, and hearing sensations.	Warm-up, cardiovascular exercise* & stretching.
4	30 min.	Breathing, body, hearing sensations, and thoughts/emotions awareness.	Warm-up, cardiovascular exercise* & stretching.
5	30 min.	Breathing, body, hearing sensations, and thoughts/emotions awareness.	Warm-up, cardiovascular exercise* & stretching.

Note: *Mindfulness* exercises are sitting meditations of the MBSR program adapted to lunchtime. *Cardiovascular* exercises consist of rowing, elliptical, stationary bike, or running (indoor or in a park), at the participant's choice.

Table 2. *Example of personal records sheet translated into English (original in Spanish).*

RESEARCH ON RECOVERY STRATEGIES:
MINDFULNESS & PHYSICAL EXERCISE

PERSONAL RECORDS: OCTOBER

Name and surname: ID code:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
2 15 min	3 15 min	4 15 min	5 15 min	6 15 min
9 20 min	10 20 min	11 20 min	12 (national holiday)	13 20 min
16 25 min	17 25 min	18 25 min	19 25 min	20 25 min
23 30 min	24 30 min	25 30 min	26 30 min	27 30 min
30 30 min	31 30 min	ACCOMPLISHED	NOT ACCOMPL.	

Note: In this registration sheet the participant wrote down each day if they had accomplished their practice (in green) or not (in red).

Table 3. *Descriptive Analysis and Socio-demographic Comparison of Variables at Baseline*

Variables	MF (n = 30)	PE (n = 30)	CG (n = 34)	Total (N = 94)	
	M (SD)	M (SD)	M (SD)	M (SD)	F / p
Age	47.40 (3.84)	47.77 (5.16)	45.44 (8.66)	46.81 (6.37)	F = 1.26, p = .29
Gender					X^2 = 2.01, p = .36
Female	23 (76.7%)	18 (60.0%)	22 (64.7%)	63 (67.0%)	
Male	7 (23.3%)	12 (40.0%)	12 (35.3%)	31 (33.0%)	
Fatigue	3.43 (.90)	3.24 (.74)	3.40 (1.04)	3.36 (.90)	F = .02, p = .89
Detachment	3.00 (1.31)	4.11 (.83)	2.83 (1.39)	.3.30 (1.32)	F = .24, p = .63
Sleep	3.03 (.87)	3.27 (1.05)	3.35 (.66)	3.22 (.87)	F = 2.03, p = .16
Stress symptoms	3.17 (1.03)	3.24 (.69)	2.90 (1.03)	3.17 (.94)	F = 3.78, p = .06
Attention	2.72 (.80)	3.21 (1.11)	2.36 (1.10)	2.77 (1.06)	F = 1.65, p = .20

Table 4. *Results of Final Growth Curve Models for Fatigue, Detachment, and Sleep Quality*

	Fatigue		Detachment		Sleep Quality	
	MF - CG	PE - CG	MF - CG	PE - CG	MF - CG	PE - CG
Fixed effects						
Intercept	3.12*	3.17*	3.35*	3.93*	3.28*	3.36*
Time[1]	-5.72*	-4.09*	1.84	2.25	4.40	3.81*
Time[2]	0.64	-0.57	-3.70*	2.61	-3.38	0.58
Time[3]	-0.86	-1.38	6.17*	1.91	1.46	1.22
Group	0.16	0.10	-0.30*	-0.88*	-0.02	-0.11
Group x Time[1]	5.77*	3.94*	-3.78	-4.08	-5.47	-5.39*
Group x Time[2]	-1.16	0.08	1.65	-4.56*	3.60	-0.89
Group x Time[3]	0.10	0.72	-6.62*	-2.52	0.45	-0.11
Random effects						
Intersection	0.49	0.39	0.53	0.60	0.01	0.48
Time [1]	4.29	2.42	4.99	4.95	0.44	0.12
Time[2]	2.91	3.74	3.53	2.95	1.26	9.05
Time[3]	1.98	1.70	5.48	2.51	10.43	0.92
Residuals	0.75	0.74	0.96	0.88	1.74	1.28
Setting						

AIC	2306.05	2175.88	2784.23	2497.20	4141.64	3591.52
BIC	2402.62	2271.92	2881.25	2593.02	4240.23	3690.41
-2LL	-1133.02	-1067.94	-1372.11	-1228.60	-2050.82	-1775.76

[1] Linear function. [2] Quadratic function. [3] Cubic function. * p < .0

Table 5. *Results of Final Growth Curve Models for Stress symptoms and Attention Difficulty*

	Stress-symptoms Difficulty		Attention	
	MF - CG	PE - CG	MF - CG	PE- CG
Fixed effects				
Intercept	2.77*	2.73*	2.33*	2.46*
Time[1]	-6.08*	-8.78*	-6.41*	-6.65*
Time[2]	1.99	1.07	1.44	-1.68
Time[3]	-2.24	-1.95	1.45	-2.68*
Group	0.19	0.23	0.09	-0.04
Group x Time[1]	5.07*	7.60*	5.04*	5.31*
Group x Time[2]	-4.33*	-3.31	-3.40*	-3.75*
Group x Time[3]	1.25	1.28	-2.18	2.04
Fixed effects				
Intersection	0.52	0.47	0.56	0.50
Time [1]	5.06	2.90	6.92	6.61
Time[2]	1.74	1.21	2.05	1.64
Time[3]	1.72	2.38	1.29	1.81
Residuals	0.86	0.86	0.71	0.72

Setting

AIC	2499.30	2393.20	2246.93	2208.68
BIC	2595.68	2488.92	2343.42	2304.93
logLik	1229.65	-1176.60	-1103.47	-1084.34

[1] Linear function. [2] Quadratic function. [3] Cubic function. * p < .05

Table 6. *Summary of Hypothesis confirmation*

Hypothesis	Values	Confirmation (yes/no)
H1a. A daily practice of MF at lunchtime is related to lower daily fatigue levels.	b = -.03; se = .01; t = -4.30; p < .01	Yes
H1b. A daily practice of PE at lunchtime is associated with lower levels of daily fatigue	b = -.02; se = .01; t = -3.30; p = .01	Yes
H2a. MF at lunchtime is related to increased levels of psychological detachment during lunch breaks.	b = 0.01; se = 0.01; t = 2.00; p = .04	Yes
H2b. PE at lunchtime is associated with increased levels of psychological detachment during lunch breaks.	b = -4.56; se = 1.98; t = -2.30; p = .02	Yes
H3a. MF during lunch breaks is associated with better sleep quality.	*	No
H3b. PE during lunch breaks is associated with better sleep quality.	b = 0.02; se = 0.01; t = 2.26; p = .0	Yes
H4a. MF at lunchtime is related to lower levels of daily stress symptoms.	b = -0.03; se = 0.01; t = -4.11; p < .01	Yes
H4b. PE at lunchtime is associated with lower daily stress symptoms.	b = -0.04; se = 0.01; t = -6.35; p < .01	Yes
H5a. MF at lunchtime is associated with reduced attention difficulty during the working day.	b = -.03; se = .01; t = -3.83; p < .01	Yes
H5b. PE at lunchtime is associated with reduced attention difficulty during the working day.	b = -.03; se = .01; t = -4.18; p < .01	Yes

Note: In each hypothesis, the values have been compared with those of the control group. None of the changes in the control group values were significant.
*Since no significant differences were found in these interaction factors, the simple effects analysis was not performed. See Table 3

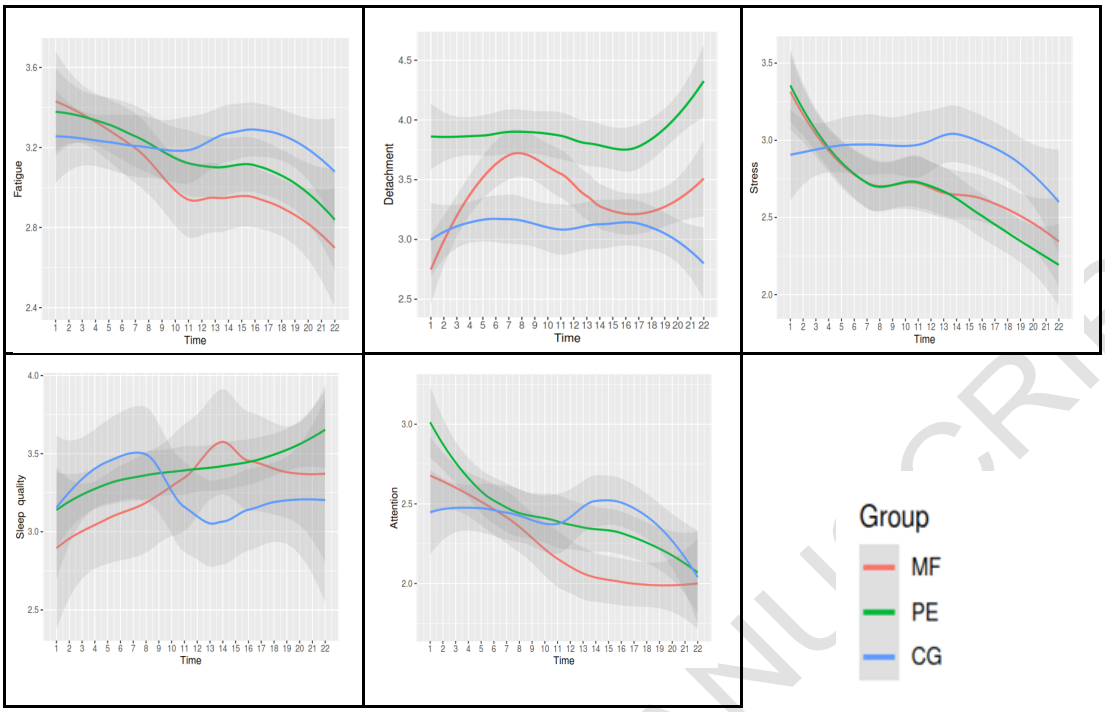

Figure 1. *Growth Curves Based on the Smoothed Conditional Means for Daily perceived fatigue, Psychological Detachment, Sleep Quality, Stress symptoms, and Attention Difficulty.*

SUPPLEMENTARY MATERIAL

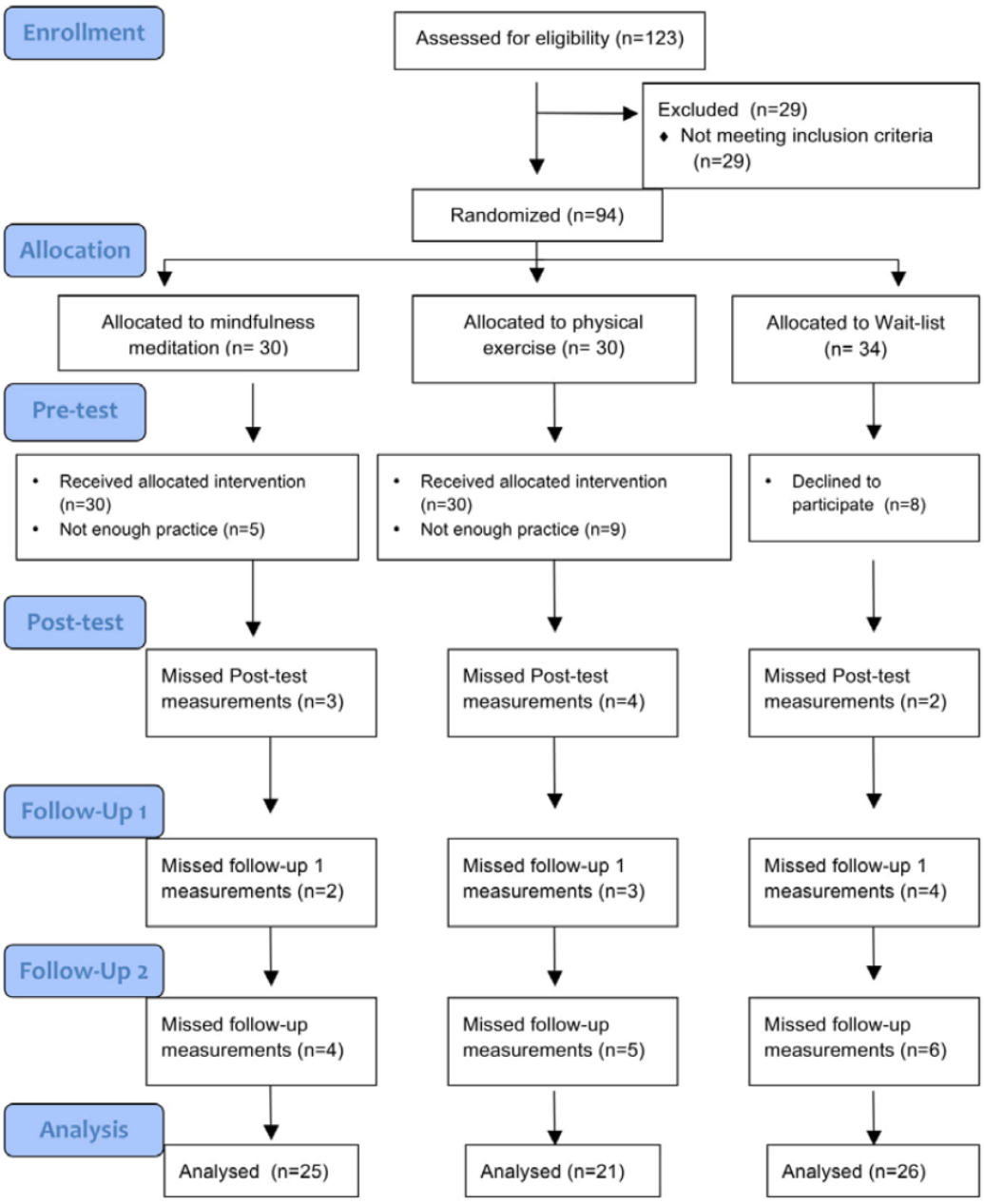

Fig 1 Suppl. CONSORT diagram of the RCT.

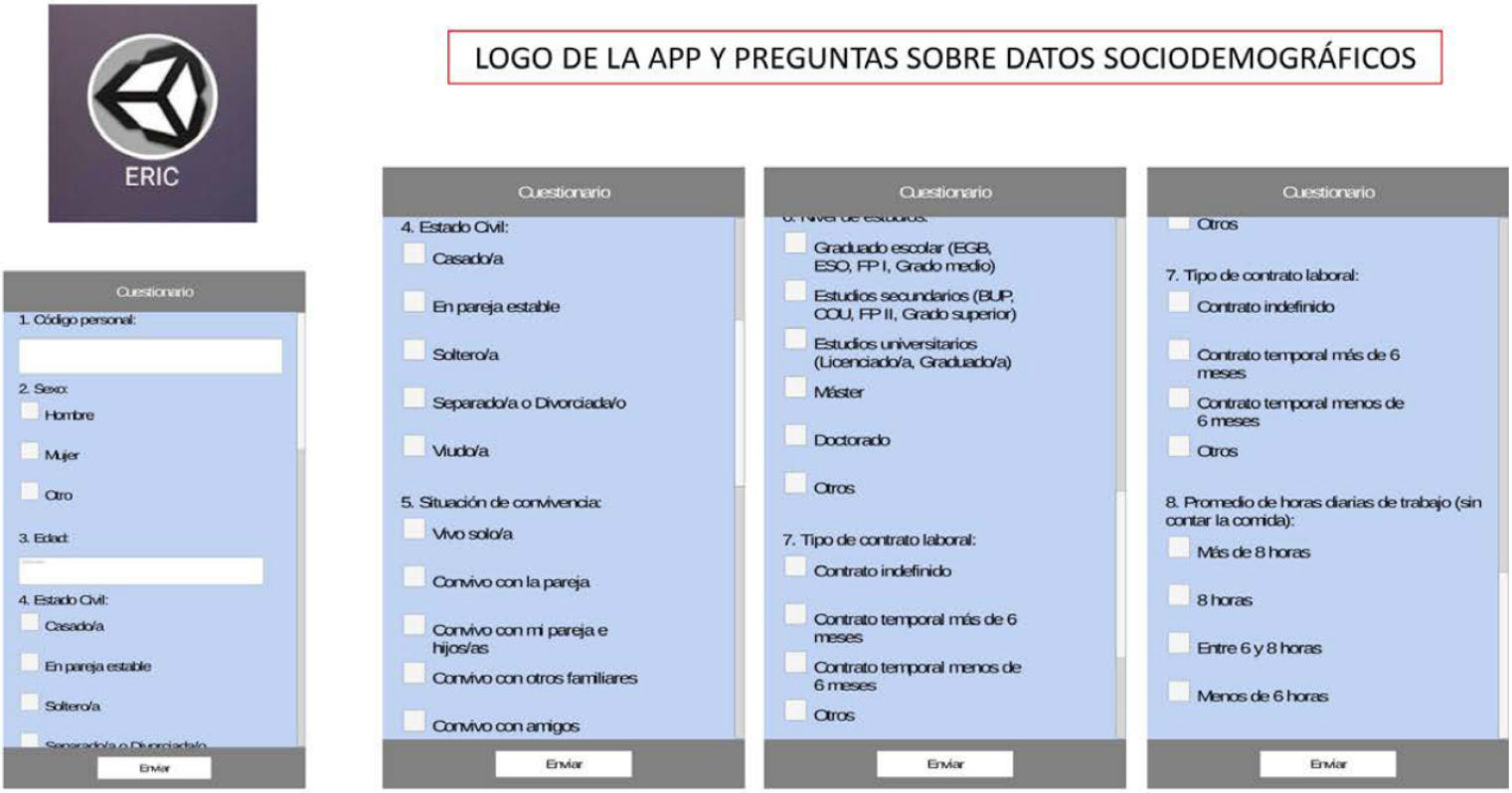

Fig 2.a Suppl. Screenshots of the ERIC App interface with socio-economic questions. This is the English translation of the items initially written in Spanish. The translation is as follows: 1. Personal code; 2. Sex (Male, Female, Other); 3. Age; 4. Marital status (Married, In stable relationship, Single, Divorced, Widowed); 5. Type of work contract (Permanent, Temporary, Temporary < 6 months, Temporary > 6 months, Other); 8. Average hours of work per day (excluding lunch) (More than 8 hours, 8 hours, between 6-8 hours, less than 6 hours).

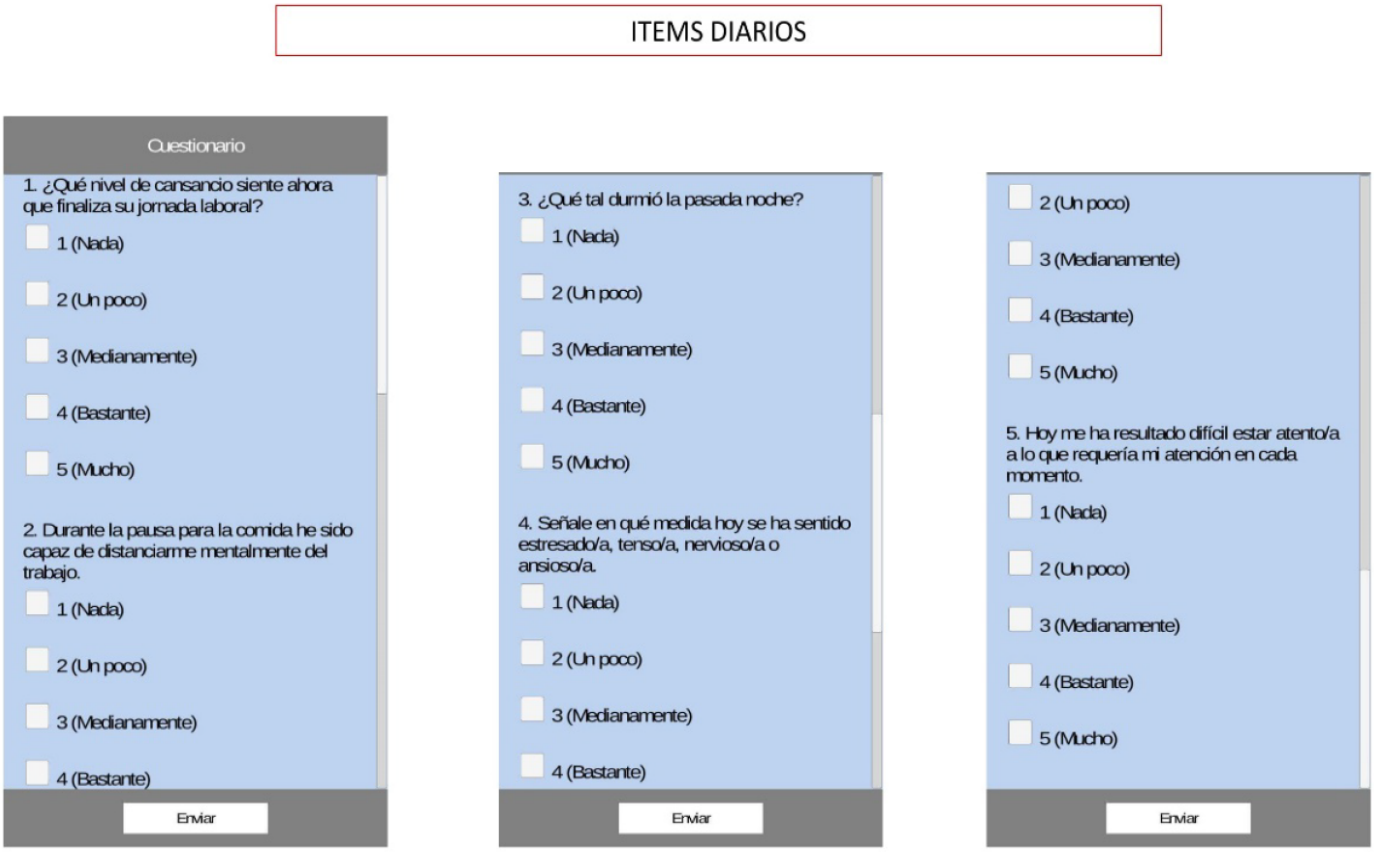

Fig 2.b Suppl. Screenshots of the ERIC App interface with daily items. This is the English translation of the items initially written in Spanish. 1. 'How fatigued do you feel now at the end of your working day?' (1 = not fatigued at all; 5 = totally fatigued); 2. 'I distance myself from my work during the lunch break' (1 = not distanced at all; 5 = distanced); 3. 'How do you evaluate last night's sleep?' (1 = terrible sleep quality; 5 = perfect sleep quality); 4. 'Stress means a situation in which a person feels tense, restless, nervous, or anxious or cannot sleep at night because his/her mind is always troubled. Do you feel this kind of stress today?' (1 = not stressed at all; 5 = totally stressed); 'I find it challenging to stay focused on what is happening in the present moment (1 = not challenging to stay focused at all; 5 = complicated to stay focused).