On-the-Job Recovery on Health- and Work-Related Outcomes: A Systematic Literature Review

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ABSTRACT

Recovery-related research has received tremendous attention due to its beneficial role in employees' health and well-being. While mounting evidence of recovery-related research has concentrated on recovery activities after work hours or during leisure times, most studies attempted to overlook the recovery role in the work settings. Indeed, recovery can occur during work breaks and have a considerable impact on reducing fatigue, sleep problems, stress symptoms, as well as improving creativity and performance. Thus, to advance the comprehensive recovery research, a systematic review of on-the-job recovery is required to gain a deeper grasp of the topic. The systematic review aims to address (1) common work settings where on-the-job recovery occurs, (2) different forms of on-the-job recovery activities and strategies, and (3) the study's variables for on-the-job recovery and its impacts, with an emphasis on health- and work-related outcomes. These insights can serve as the comprehensive review of recovery at work.

Keywords: on-the-job recovery, recovery activities, recovery strategies, systematic literature review

INTRODUCTION

For decades, recovery has been extensively discussed in the work stress literature due to its beneficial role in alleviating the adverse effect of demands on employees' health and well-being. Recovery from work is defined as the reversal of stressful processes triggered by adverse occurrences at work through the restoration of resources, such as energy (Meijman & Mulder, 1998), notably during non-work hours such as free evenings or weekends. Employees who engage in recovery are no longer subjected to massive demands at work, and their functional systems can return to pre-stressor levels in order to perform their work optimally (Demerouti *et al.*, 2009; Bosch *et al.*, 2018). Some studies show that recovery during leisure times helps to buffer the adverse effects of demands on emotional exhaustion, depression, fatigue, and sleep quality (de Jonge *et al.*, 2018; Garrick *et al.*, 2014; Yulita *et al.*, 2020), while at the same time possessing beneficial effects in boosting work engagement, creativity, and performance (Sonnentag *et al.*, 2017; Seibel *et al.*, 2021).

Other research found that recovery during work breaks allows employees to restore energy and maintain vigor, reduce fatigue, and improve job satisfaction as well as performance (Albulescu *et al.*, 2022; Hunter & Wu, 2015; Vaziri *et al.*, 2023). Thus, the recovery process does not necessarily occur during their leisure times but can even be completed during regular working hours within the work setting (Hunter & Wu, 2015; Vaziri *et al.*, 2023). As such, recovery-related research can be divided into two categories: (1) off-the-job recovery, which typically occurs during non-work hours and outside settings such as during leisure time, free evenings, or weekends, and (2) on-the-job recovery, which takes place during regular work hours and work settings including lunchtime breaks, micro-breaks, and formal work breaks.

Most recovery-related research has focused on non-work hours or leisure activities, rather than on how recovery occurs during regular work hours at work (de Bloom, Kinnunen, & Korpela, 2014; Rhee & Kim, 2016). Indeed, there has been a promising trend in on-the-job recovery research, with some researchers concentrating on specific recovery activities that employees engage in during their work breaks (Bennett *et al.*, 2020; Zhu *et al.*, 2019),

such as relaxation (e.g., progressive muscle relaxation), social (e.g., chatting with colleagues), and cognitive (e.g., cyberloafing non-work matters) activities (Sonnentag *et al.*, 2017). Other researchers have employed different forms of on-the-job recovery strategies to investigate how effective break experiences are in reducing the adverse effect of job demands (Shi *et al.*, 2021). As such, a review of the synthesis on employees' break activities and strategies is necessary (Chan *et al.*, 2022), as the field of this knowledge remains limited and warrants more investigation.

Therefore, the aim of the current study is to conduct a review of the existing literature on the on-the-job recovery activities and strategies. This review seeks to provide a more comprehensive understanding of recovery that occurs at work and to offer better insights for future investigations into on-the-job recovery. To fill the gaps in prior studies, the researcher first investigates sample selection by geographical region and research methodology for on-the-job recovery. Second, the researcher examines the common work settings, on-the-job recovery activities, and strategies that occur at work. Finally, the researcher looks into the study's variables for on-the-job recovery and its effects, focusing on health- and work-related outcomes.

METHOD

Design

The current study conducted a systematic literature review using relevant criteria as recommended by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). It has five subsections: search strategy, inclusion and exclusion criteria, eligibility, data abstraction and analysis.

Search Strategy

In September 2025, a systematic search strategy was developed through three electronic databases, namely Scopus, Web of Science, and Sage. The search process used keywords from the titles and abstracts, including "on-the-job recovery," "recovery activities," "recovery strategies," "break," "lunch break," and "microbreak." This approach yielded 29 documents from Scopus, 19 documents from Web of Science (WOS), and 46 documents from Sage databases (see Figure 1). After removing duplicates (3 articles), 91 articles were retained for abstract reading.

Inclusion and Exclusion Criteria

The initial inclusion criterion was document type, with a concentration on research articles published in peer-reviewed journals and using empirical data as primary sources. Furthermore, the second inclusion criterion focused on the articles published in the English language. Articles published in other languages are excluded. The third requirement for inclusion was concerned with a six-year timeline, with dates ranging from 2020 to 2025. Another criterion for inclusion addressed the selection of samples, which included university students and employees from various occupations. The final criterion was articles published in the fields of social sciences, psychology, and business management.

The exclusion criteria included systematic reviews, meta-analyses, chapter-in-books, conceptual papers, non-English research publications, and samples that were not students or employees, and articles not published in the fields of social sciences, psychology and business management, as detailed in Table 1. Overall, 30 documents were removed based on these criteria, leaving only 41 documents eligible for further consideration in the current review.

Table 1: Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Type of document	Peer-reviewed journal article	Systematic reviews, meta-analyses, chapter-in-books, conceptual papers, non-research papers

Language	English	Other languages
Timeline	Between 2020 to 2025	< 2020
Sample	Employees or students	Patients, child, elderly, husband, wife
Field of study	Social sciences, psychology, and business management	Other than social sciences, psychology, and business management

Eligibility

In total, 41 articles were prepared for the third stage. Eligibility is a method that manually includes or excludes articles based on the authors' specific criteria. At this stage, the titles, abstracts, and main contents of the publications were rigorously examined to confirm that they met the inclusion criteria and were adequate to achieve the study's objectives.

Data Abstraction and Analysis

The remaining articles were evaluated, reviewed, and analyzed following the eligibility process. The data were extracted to identify significant themes and sub-themes by reading titles, abstracts, and main content of the articles (in-depth). During the review process, answers were sought by the following: (a) sample selection; (b) study region; (c) research design; (d) work settings; (e) on-the-job recovery activities (f) on-the-job recovery strategies, and (g) the study's variables and outcomes. After reviewing the abstracts of 41 articles, 20 were excluded because they were irrelevant to the research objectives. These eliminated articles did not assess recovery activities or recovery experiences in the work setting. Following a thorough review of the full texts, only 12 articles remained. Tables 2-5 contain summaries for each article included in this review.

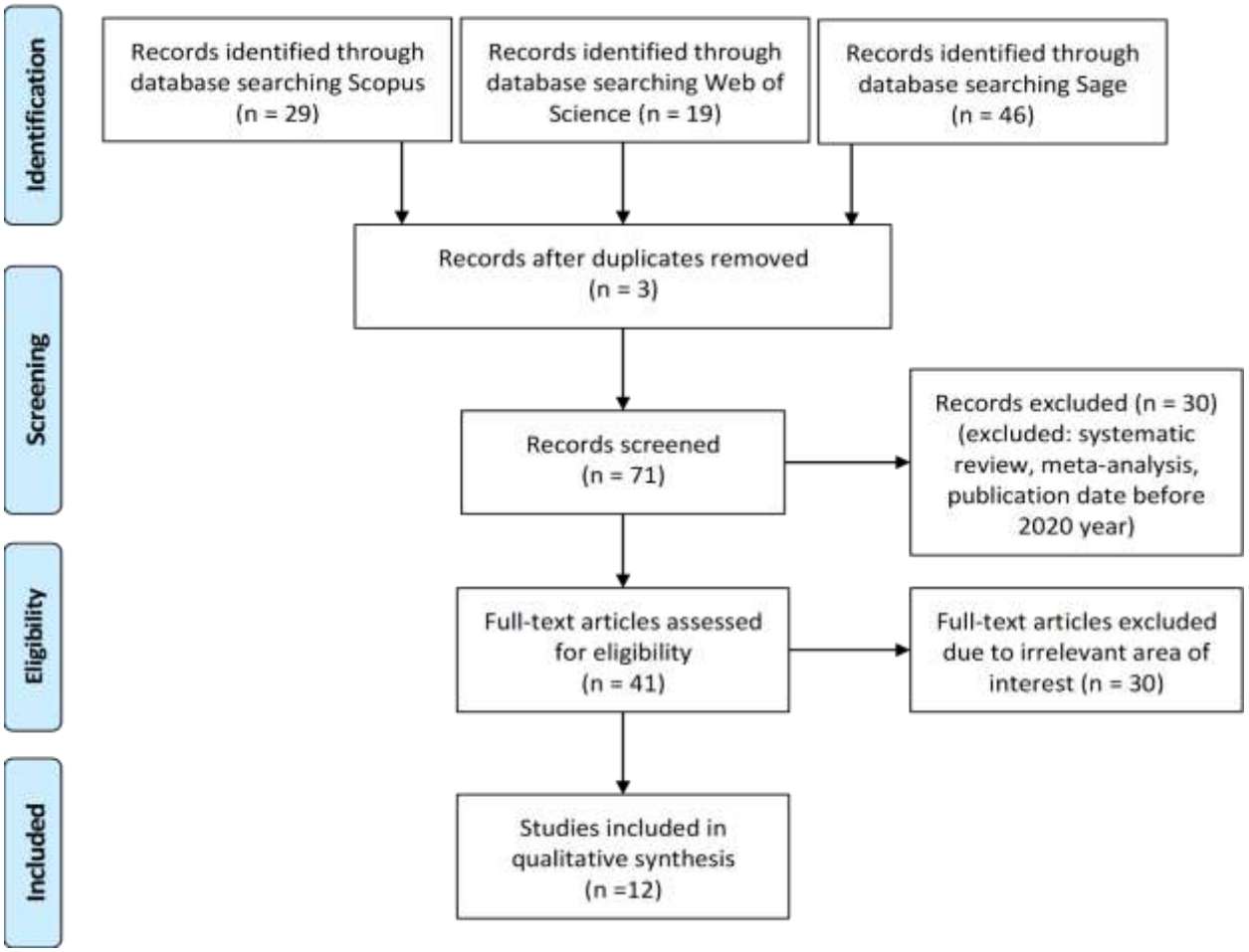

Figure 1: Flow diagram for the systematic literature review process

RESULTS

General findings

Accordingly, only 12 on-the-job recovery research were included in the current review (see Table 2), with the majority conducted in a western context, specifically the United States, followed by Germany, Finland, and Spain. Only one study was relatively conducted in each country in an Eastern context, including South Korea, Japan, and Turkey. For the study's sample selection, most of the employees were selected from relatively diverse occupations, such as nurses, teachers, and construction and services workers. Some studies were conducted among university students. Meanwhile, most on-the-job recovery research was conducted using experimental design, followed by cross-sectional studies, interviews, diary studies, and ecological momentary intervention (EMI), as detailed in Table 3.

On-the job recovery settings, activities and strategies

Table 4 summarizes the on-the-job recovery settings, activities, and strategies. In terms of on-the-job settings, the majority of studies focused on the work break (42%); however, these studies did not specify when recovery activities occurred within these breaks on work hours. Several studies looked at recovery activities during lunch break (17%), micro-break (17%), and rest break (8%). Other studies were conducted on-the-recovery within-workday (25%), either during micro-breaks, lunch breaks, or rest breaks, without specifying which.

Table 2: Sample selection and study region

Sample	United States (n = 5)	Germany (n = 2)	Finland (n = 1)	South Korea (n = 1)	Spain (n = 1)	Japan (n = 1)	Turkey (n = 1)
Hospitality	413					29	
Nurse	1861	38					
Teacher			107				
Construction				230			
Service					94		
Diverse	16						255
Others (students)	639	85					
Total	2929	123	107	230	94	29	255

Table 3: Research design

No. of research	**Research design**	**Authors**
5	Experimental	Bennett *et al.*, 2020; Hoover *et al.*, 2022; Diaz-Silveira *et al.*, 2023; Singh *et al.*, 2020; Conlin *et al.*, 2021
3	Cross-sectional	Cheng & Choo 2021; Kwala & Agoyi 2025; Sagherian & Thomas 2023
2	Interviews	Bennett *et al.*, 2020; Saito & Tanaka 2024

2	Daily diary study	Virtanen *et al.*, 2021; Yun & Beehr 2023
1	Ecological momentary intervention (EMI)	Riedl *et al.*, 2024

The review article details the pairing of numerous recovery activities with other on-the-job activities (see Table 4). The majority of the studies implemented numerous relaxation and mindfulness activities, such as uninterrupted rest breaks (Sagherian & Thomas, 2023), sitting for mindfulness meditation (Diaz-Silveria *et al.*, 2023), short audio-guided mindfulness meditations (Riedl *et al.*, 2024), quality of lunchtime naps (Yun & Beehr, 2023), progressive muscle relaxation (Hoover *et al.*, 2022), and napping and other-related relaxation systems (Singh *et al.*, 2020). Some investigations paired relaxation and mindfulness activities with physical activities (Bennett *et al.*, 2020), aerobic exercise (Diaz-Silveira *et al.*, 2023), stationary bike exercise (Hoover *et al.*, 2022), and boxing sessions (Singh *et al.*, 2020).

Several research studies have also adopted similar non-social media activities, such as relaxation activity, nutrition-intake activity, social activity, and cognitive activity (Cheng & Choo, 2021; Bennett *et al.*, 2020; Saito & Tanaka). While, another study concentrated on social media break activities such as relaxation and mastery micro-break content (Conlin *et al.*, 2021), social media break activities (Cheng & Choo, 2021), and cyberloafing on non-work-related online activities (Kwala & Agovi, 2025).

A range of recovery strategies have been implemented, with the majority of the studies employing experimental and intervention designs in which employees are randomly assigned to specific on-the-job recovery activities (Bennett *et al.*, 2020; Hoover *et al.*, 2022; Diaz-Silveira *et al.*, 2023; Singh *et al.*, 2020; Conlin *et al.*, 2021; Riedl *et al.*, 2024). Other strategies require employees to complete a self-reported questionnaire about their break activities during their work break or within the workday, either through a single-point data collection or a series of daily assessments (Cheng & Choo, 2021; Kwala & Agoyi, 2025; Sagherian & Thomas, 2023; Virtanen *et al.*, 2021; Yun & Beehr, 2023). Another two investigations used semi-structured interview strategies to inquire about employees' on-the-job recovery break activities during the workday (Bennett *et al.*, 2020; Saito & Tanaka, 2024). In summary, table 4 includes detailed explanation for each on-the-job recovery strategy.

On-the-job recovery research's variables and outcomes

Table 5 summarizes the quantitative study's variables and outcomes for on-the-job recovery research. As referring to the table, most studies are emphasizing on-the-job recovery activities (67%) as the main predictors in predicting employees' health- and work-related outcomes. Only 33% of studies incorporated job demands, including daily emotional and mental demands, as independent variables in their analyses. Meanwhile, the study's findings mostly predicted employees' health-related outcomes such as fatigue (Sagherian & Thomas, 2023; Diaz-Silveria *et al.*, 2023; Singh *et al.*, 2020; Hoover *et al.*, 2022), recovery experiences (e.g., psychological detachment) (Cheng & Choo; Rield *et al.*, 2024; Hoover *et al.*, 2022; Diaz-Silveria *et al.*, 2023), and psychological resources (Bennett *et al.*, 2020; Hoover *et al.*, 2022). Other studies have predicted work-related outcomes such as performance (Singh *et al.*, 2020; Conlin *et al.*, 2021), vigour (Singh *et al.*, 2020), and afternoon creativity (Yun & Beehr, 2023). Furthermore, for mediation and moderation variables, some studies focused primarily on on-the-job recovery break activities, recovery experiences, and workload in the association between the study's independent and dependent variables.

DISCUSSION

The current review aims to improve understanding of on-the-job recovery activities and strategies that occur during working hours, as well as how they influence the stressor-strain-motivation associations. Despite the small number of publications assessed, the majority of investigations were conducted in a Western setting; nevertheless, there are some promising trends, with several studies completed in Asian settings, including in South Korea, Japan, and Turkey. The current study found that recent recovery-related research has shifted the trend from traditional cross-sectional design to more complicated research designs such as experimental and

ecological momentary intervention and diary study designs. This trend has not only allowed for systematically investigating cause-and-effect relationships between variables (Winship & Morgan, 1999) but also enabled the reduction of the common method bias issues.

Table 4: Types of on-the-job recovery settings, activities, and strategies

On-the-job recovery setting	**On-the job recovery activities**	**On-the-job recovery strategies**	**Authors**
Micro-breaks	Physical activities, social or relational activities, cognitive breaks, passive activities, attending to physiological needs (e.g., resting or eating) and directing attention to natural elements or relaxation.	Employees were interviewed about how micro-breaks impact psychological resources and recovery experiences.	Bennett *et al.* (2020)
Micro-breaks	Relaxation micro-break and mastery micro-break contents	Employees were assigned content within 40-second for relaxation micro-break or mastery micro-break or no break during a monotonous work task within the workday.	Conlin *et al.* (2021)
Rest break	Uninterrupted rest-break and additional rest-break during a 12-hour work shift	Nurses were given an uninterrupted 30-minute rest-break and sit down for a meal without patient responsibilities, followed by another 10- to 15-minute rest break during a 12-hour shift.	Sagherian & Thomas (2023)
Lunch break	Sitting for mindfulness mediation and aerobic physical exercise	Employees were assigned a mindfulness-based intervention with a group sitting for mindfulness mediation or performing aerobic physical exercise within 15 to 30 minutes of their lunch break.	Diaz-Silveira *et al.* (2023)
Lunch break	Quality of lunchtime naps versus lunchtime meals	Employees were distributed self-reported the quality of their lunchtime naps and meals on workdays through nap's recuperating effect and duration as well as satisfaction and nutritional aspects of meal quality.	Yun & Beehr (2023)

Table 4: Types of on-the-job recovery settings, activities, and strategies (continue)

On-the-job recovery setting	**On-the job recovery activities**	**On-the-job recovery strategies**	**Authors**
Work break	Stationary bike exercise and progressive muscle relaxation	Employees were randomly allocated to either a physical exercise (stationary bike) or a relaxation activity (progressive muscle relaxation) during their work break via resource intervention.	Hoover *et al.* (2022)
Work break	Short mindfulness mediations	Nurses on a 12-hour shift are given a short audio-guided mindfulness mediations during work breaks.	Riedl *et al.* (2024)

Work break	Napping, boxing and relaxation system	Through incentivized work break interventions, first employees were assigned to take a nap for 10-minute. Then, employees participated in a 3-minute boxing session using boxing bandages, gloves and a punching bag. Third, employees were given an audio-visual stimulation and a shiatsu massage chair with a 10-minute-deep relaxation program.	Singh *et al.* (2020)
Work break	Cognitive, relaxation, nutrition-intake, and social activities	Employees were interviewed on the role of supportive work break times at work and they perceived nine recovery activities falling into four categories including cognitive, relaxation, nutrition-intake, and social.	Saito & Tanaka (2024)
Work break	Recovery break during afternoon break including detachment, relaxation, autonomy, mastery, meaning and affiliation break.	Employees were distributed paper-and-pencil diary questionnaires referring to all breaks during the working day with a minimum duration of five minutes.	Virtanen *et al.* (2021)

Table 4: Types of on-the-job recovery settings, activities, and strategies (continue)

On-the-job recovery setting	**On-the job recovery activities**	**On-the-job recovery strategies**	**Authors**
Within-workday	Social media break activities (social activity, hedonic activity, and cognitive activity) and non-social media activities (relaxation activity, nutrition-intake activity, social activity, and cognitive activity)	Employees were distributed self-reported questionnaires related to break activities within the workday. The questionnaires were divided into two categories of break activities, including social media and non-social media break activities.	Cheng & Choo (2021)
Within-workday	Cyberloafing on non-work-related online activities during work hours	Employees were distributed self-reported questionnaires relating to cyberloafing, which comprises engaging in non-work-related online activities, such as browsing the Internet or utilizing social media platforms.	Kwala & Agoyi (2025)
Within-workday	Physical activities, social or relational activities, cognitive breaks, passive activities, attending to physiological needs (e.g., resting or eating) and directing attention to natural elements or relaxation.	Students were randomly assigned to test the impact of micro-breaks durations and activities on the recovery of psychological resources and recovery experiences.	Bennett *et al.* (2020)

Table 5: Quantitative study's variables and outcomes

Independent variable	**Mediator**	**Moderator**	**Outcomes**	**Authors**
Physical, social, cognitive, passive, and relaxation-oriented breaks			Psychological resources (i.e., energy and attention)	Bennett *et al.* (2020)

Relaxation micro-break content, mastery micro-break content	Psychological detachment, positive affects		Performance	Conlin *et al.* (2021)
Rest break	Psychological detachment	Workload	Acute fatigue	Sagherian & Thomas (2023)
Physical exercise, Mindfulness meditation			Fatigue, psychological detachment, sleep quality, stress symptoms, and attention problems.	Diaz-Silveira *et al.* (2023)
Quality of lunchtime meals, quality and duration of lunchtime naps	Emotional work engagement, cognitive depletion		Afternoon creativity	Yun & Beehr (2023)
Mental demands		Physical activity (i.e., stationary bike exercise), relaxation activity (i.e., progressive muscle relaxation)	Recovery experiences (i.e., psychological detachment and relaxation), psychological resources (i.e., self-regulatory capacity and energy), insufficient recovery (i.e., fatigue)	Hoover *et al.* (2022)

Table 5: quantitative study's variables and outcomes (continue)

Independent variable	**Mediator**	**Moderator**	**Outcomes**	**Authors**
Short audio-guided mindfulness meditations (intervention)			Break recovery, mood dimensions (i.e., calmness, positive valence, and energetic arousal), psychological detachment, attention failures	Riedl *et al.* (2024)
Physical, relaxation, social interactions, cognitive distractions, work-related breaks		Task type before break, study setting, participant category, duration of break, control group	Vigor, fatigue, objective and subjective task performances	Singh *et al.* (2020)
Daily emotional demands	Detachment, relaxation, autonomy, mastery, meaning, affiliation break experiences (in the afternoon)		Positive affect, negative affect (in the afternoon and evening)	Virtanen *et al.* (2021)
Job demands	Social media break activities (i.e., social, hedonic, and cognitive), non-social break activities (i.e., relaxation,		Recovery experiences	Cheng & Choo (2021)

	nutrition-intake, social, and cognitive)			
Cyberloafing	Perceived stress reduction, mental breaks and relaxation, creativity and innovation		Well-being	Kwala & Agoyi (2025)

In terms of work break characteristics, the researcher found that most studies were emphasized on work breaks than micro-breaks, rest breaks, lunchtime break or intra-workday breaks. It is because work breaks are more formal, structured, and scheduled, allowing employees to be assigned with on-the-job recovery activities. Formal breaks might include morning and afternoon tea breaks, lunch breaks, and any other breaks that the organization formally arranges or allows employees to take on their own (Trougakos & Hideg, 2009). Interestingly, the reviewed research included a wide range of on-the-job recovery activities and strategies ranging from relaxation and mindfulness activities, followed by physical activities and non-social media break activities, as well as social media content or break activities. This is because recovery encompassed several dimensions such as physical, emotional, and cognitive experiences. Relaxation and mindfulness, for example, improve mental detachment; physical activities replenish bodily resources; and non-social media and social media breaks may meet cognitive or social needs, allowing employees to temporarily divert their attention away from massive job demands at work (Ejlertsson *et al.*, 2021).

Furthermore, the researcher found that the study's variables involved in on-the-job-recovery investigations mostly predicted health-related outcomes such as fatigue, sleep quality, stress symptoms, and attention problems. This is because recovery is primarily concerned with reversing or alleviating the physiological and psychological strains caused by stressful events or demands experienced at work.

Implications For Managers and Organizations

The study's findings offer several practical implications. First, managers might design flexible work schedules that allow employees to take micro-breaks, rest breaks, work breaks, or short physical activity breaks within the workday. This flexibility helps employees personalize recovery time for their immediate recuperation due to constant job demands at work. Second, the management should promote a variety of recovery activities such as progressive muscle relaxation, mindfulness, deep breathing exercises, stationary bike exercise, social media breaks, or even social connection during breaks to improve employees' recovery. The varied alternatives make recovery adaptable to different employee preferences and physical abilities. Finally, the management may include recovery activities into organizational wellness programs, such as offering napping areas, relaxation areas, or guided meditation sessions for employees to access during breaks at work.

Limitations

Some study's limitations need to be addressed. The current reviews focused on only a limited number of publications, as the researchers are more interested in exploring recovery activities and strategies that commonly occurred in the work settings instead of during off-job times. While most recovery-related research was focused on the recovery activities after work hours, this review could restrict the researcher from uncovering recovery activities that are implemented outside work settings. Second, the current reviews also specifically specified the timeline within the six recent years in the literature, which could potentially limit or exclude the potential studies that are relevant to the on-the-job recovery context. Perhaps future reviews should extend the timelines that include all relevant recovery-related studies. Finally, the researcher included a mix of sample selections, which consists of employees from diverse professions and university students, due to limited publications available based on specific criteria. Future reviews should at least differentiate employees between professions and sectors as well as students.

CONCLUSION

The current review offers a systematic literature evaluation to better understand the role of on-the-job recovery activities and strategies on the stressor-strain-motivation associations. Through the reviewing process, the

majority of studies were conducted using experimental designs with diverse samples from various professions, notably in a Western context. Although the current review focused extensively on on-the-job recovery activities and strategies that occur within the workday, more relevant studies from prior literature should be included to improve the comprehensiveness and understanding of the role of on-the-job recovery. The current study implies that more research should be undertaken in an Eastern context to improve knowledge of the cultural factors that may contribute to disparities in how employees perceive recovery and its consequences.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to the publication of this paper.

Data Availability Statement

The datasets used in the current investigation are publicly available, as indicated in the reference list. All data extracted from the listed studies are accessible from the respective author on reasonable request.

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