systematic review Article: Evaluate the effect of mindfulness interventions on psychological detachment from work: A systematic review and meta-analysis of randomized controlled trials

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A B S T R A C T

Backgrounds: The aim of the preset study was to evaluate the effect of mindfulness interventions on psychological detachment from work.

Methods: MEDLINE (PubMed and Ovid), Web of Science and Scopus were among the international databases searched for relevant study keywords up to December 2024 for this systematic review and meta-analysis. This study included RCT studies published in English. STATA/MP. Data were analyzed using v17 software.

Results: Six studies included in present meta-analysis. The mean differences of psychological detachment scores between the mindfulness intervention before and after the intervention were 0.97 (MD = 0.97; 95% CI = [0.85–1.10]; $p < 0.01$; $I^2 = 88.59\%$; $p<0.01$).

Conclusion: two, six and eight-week mindfulness-based interventions can effectively extent improve psychological detachment.

Introduction

The working reality of today is significantly different from that of decades ago. Because work can be done anytime, anywhere, and management expects to be available anytime, anywhere, employees often find it difficult to psychologically “switch off” from their work during non-work time. Therefore, it is becoming increasingly difficult to recover from work (1). However, it is concerning to learn more about employees' reports of stress, burnout, and work-family conflict (2). These pervasive concerns have a significant negative impact on productivity at societal and organizational levels and are associated with significant healthcare-related costs (3).

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In this situation, psychological detachment from work, or people's ability to physically or mentally disconnect from their workplace during downtime, is critical as it replenishes depleted resources and facilitates successful recovery from work-related stress. Several meta-analyses have provided evidence to support the notion that psychological distance from work, or simply detachment, is associated with better performance, greater well-being, and a reduction in tiredness and fatigue (4-7). Several individually oriented intervention studies have shown that the ability to disengage from work and relax at home can be trained. Specifically, mindfulness-based interventions have been found to support employees in psychologically detach from work during non-work time (8-12). mindfulness-based interventions may be more effective for white-collar employees (1). Therefore, the present meta-analysis attempted to provide evidence in this field with the consensus of clinical trial results around the world. The aim of the preset study was to evaluate the effect of mindfulness interventions on psychological detachment from work.

Methods

Search strategy and Information sources

Until July 2024, the international databases MEDLINE (PubMed and Ovid), Embase and Cochrane were searched for scientific evidence for the evaluate the effect of mindfulness interventions on psychological detachment from work using relevant keywords (Table 1). Scopus Wiley Online Library, Web of Science, Cochrane Central Register of Controlled Trials, EBSCO, ISI, Elsevier and the Google Scholar search engine were also used. The present study is based on the 27-point checklist PRISMA 2020(13).

Table 1. Search strategy used for each database

NO.	Search Terms
The search strategy used in MEDLINE (via PubMed)	
1	("Mindfulness"[Mesh]) OR ("Mindfulness/education"[Mesh] OR "Mindfulness/instrumentation"[Mesh] OR "Mindfulness/methods"[Mesh] OR "Mindfulness/organization and administration"[Mesh] OR "Mindfulness/standards"[Mesh] OR "Mindfulness/statistics and numerical data"[Mesh]).
2	All MeSH Categories: Psychiatry and Psychology Category; Psychological Phenomena; Mental Processes; Mindfulness.
3	("Psychological Distance"[Mesh]) AND ("Rumination Syndrome"[Mesh] OR "Rumination, Cognitive"[Mesh]).
4	"Randomized Controlled Trial" [Publication Type]
The search strategy used in Cochrane	
1	"Mindfulness"
2	"Psychological detachment"
3	"Randomized Controlled Trial"
The search strategy used in Embase	
1	Mindfulness: ab,ti,kw

2	Psychological detachment':ti,ab,kw
3	Randomized Controlled Trial: ab,ti,kw
4	chapter' OR 'conference abstract' OR 'conference paper' OR 'conference review' OR 'editorial' OR 'erratum' OR 'letter' OR 'note' OR 'preprint' OR 'short survey'/it (Filter)

Selection criteria

Inclusion criteria for studies in this research were articles published in English. The answers to the questions in the current study were based on the PICOS strategy; Population (P): Employees; Intervention (I): Mindfulness; Comparison (C): baseline and control group; Average scores of psychological detachments(O): Effectiveness; Study design(s): randomized controlled trial (RCT). Review studies and books; qualitative studies; laboratory studies; animal studies; studies without comprehensive and relevant data; Data not reported in the breast Cancer were excluded from the study.

The process of selection and data collection

Two researchers separately collected data from subjects using a standard data collection form designed in advance to reduce reporting, data collection errors, and omissions. The research team created the original form, which included the following information: the author's name, year of publication, Number of patients in each group, mean of age, working hours (hr/ per week), professional experience (years), Post-test, follow-up, Intervention time, Measures.

Methodological quality

Two independent reviewers evaluated the methodological quality of the included studies using the Cochrane Risk of Bias Tool(14) with included the following domains: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective outcome reporting, and other sources of bias.

Heterogeneity and publication bias

The heterogeneity across studies was examined using the Chi-square ($\chi 2$) test and quantified by the I^2 statistic. According to the I^2 value, heterogeneity was classified as low (less than 50%), a value between 50 and 74% means moderate heterogeneity, and a value above 75% is considered high heterogeneity. The possibility of publication bias was explored by the Egger tests, and funnel plot.

Data analysis

The mean differences in psychological distance scores were determined with 95% confidence intervals based on a fixed-effects model with inverse variance. The data were analyzed at a significance level of 0.05 using Stata software (version 17).

Results

Description of studies

The initial search found 489 articles. In the first phase, 81 articles were deleted due to duplicate records based on the article titles. In the second step, studies that did not meet the inclusion criteria were excluded by reviewing the abstract of 453 articles (n=396). In the third step, 52 articles with incomplete data or non-compliance with the inclusion and exclusion criteria were eliminated by examining the full text of 57 articles. Finally, five articles were used in the present study (Fig. 1 and Table 2).

Identification of studies via databases and registers

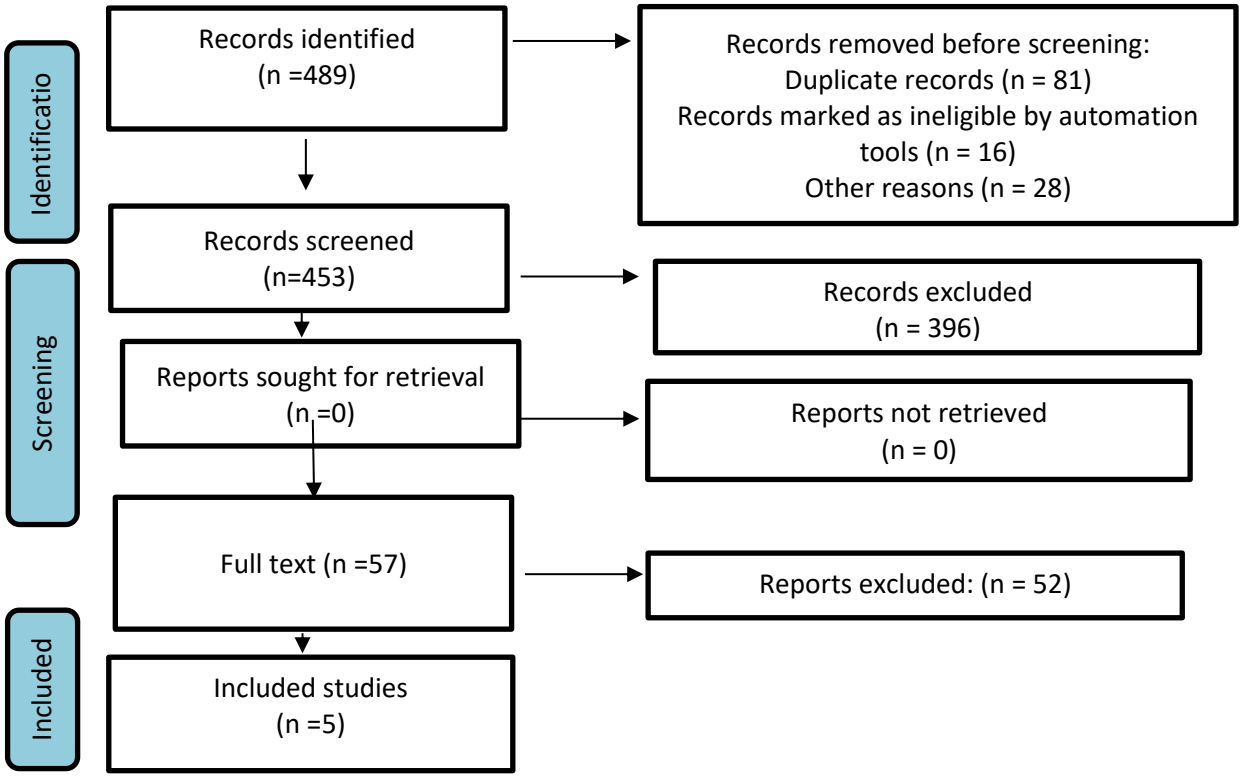

Figure 1. PRISMA 2020 Checklist

Study characteristics

All included studies were RCTs. 330 participants were in the group that received the intervention of Mind Ad and 368 participants were in the control group (total: 698). The average age of the participants was 42.8 years. A summary of study characteristics is provided in Table 2.

Table 2. Summary characteristics of selected studies evaluating mindfulness interventions for psychological detachment from work

Study. Years	Sample size		Mena of age [SD]	working hours hr/ per week [SD]	Mean of professional experience years	Post-test	follow-up	Intervention time	Measures
	MBI group	Control group							
Reis et al., 2024 (15)	130	132	40.56 [10.93]	35.7 [7.82]	11.7 [10.9]	8 weeks	3 months	6 weeks/ 45 to 60 min	REQ
Mellner et al., 2022 (16)	20	20	54.53 [5.13]	45 [5.99]	NR	6 weeks	6 months	6 weeks/ 60 min	REQ
Althammer et al., 2021 (17)	80	110	42.23 [10.72]	NR	NR	2 weeks	NR	2 weeks/ 20 min	REQ
Tement et al., 2020 (18)	33	33	>18	NR	NR	6 weeks	3 months	6 weeks/2 days/ 30 min/	REQ

Hülsheger et al., 2015 (11)	67	73	37 [13.3]	NR	11.2 [11.5]	2 weeks	NR	NR	REQ

MBI: mindfulness-based intervention; REQ: Recovery Experience Questionnaire

Bias assessment

Risk of bias in included studies: Figures 2 and Table 3 show the risk of bias in the judgments of the included studies. The risk of selection bias was low in most studies; All RCTs reported adequate random sequence generation and allocation concealment. The risk of performance distortion was consistently assessed as low.

Table 3. Risk of bias of all included studies

Study. Years	PATIENT SELECTION	INDEX TEST	REFERENCE STANDARD	FLOW AND TIMING
Reis et al., 2024	Low	Low	Low	Low
Mellner et al., 2022	Low	Low	High	Low
Althammer et al., 2021	High	Low	Low	Low
Tement et al., 2020	Low	Low	Low	Low
Hülsheger et al., 2015	Low	Low	Low	Unclear

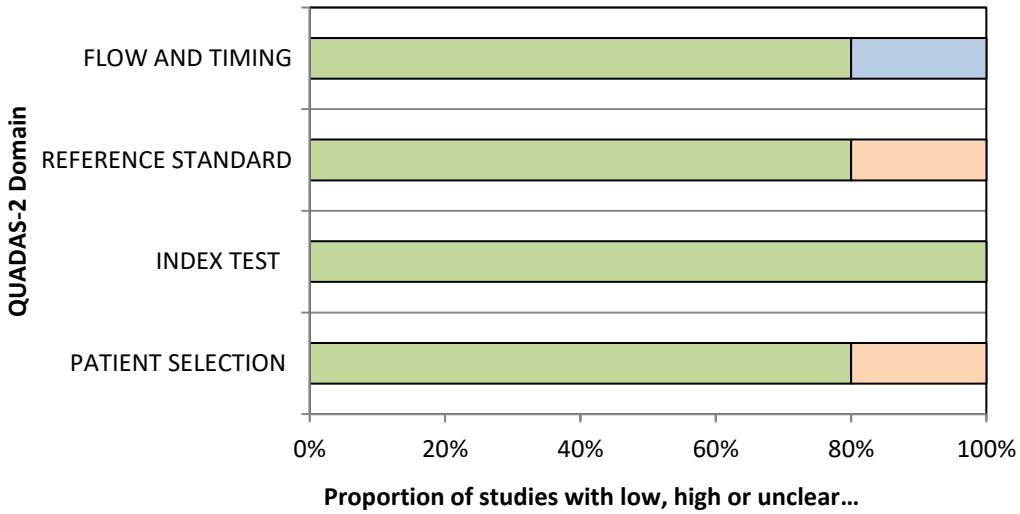

Figure 2. Risk of bias summary of authors' judgments for each included study

Effect of mindfulness interventions on psychological detachment

The mean differences of psychological detachment scores between the mindfulness intervention before and after the intervention were 0.97 (MD = 0.97; 95% CI = [0.85–1.10]; $p<0.01$; $I^2 = 88.59\%$; $p<0.01$) with high heterogeneity between studies (Figure 3). The mindfulness-based intervention group showed a significant mean increase from pre-test to post-test in psychological detachment.

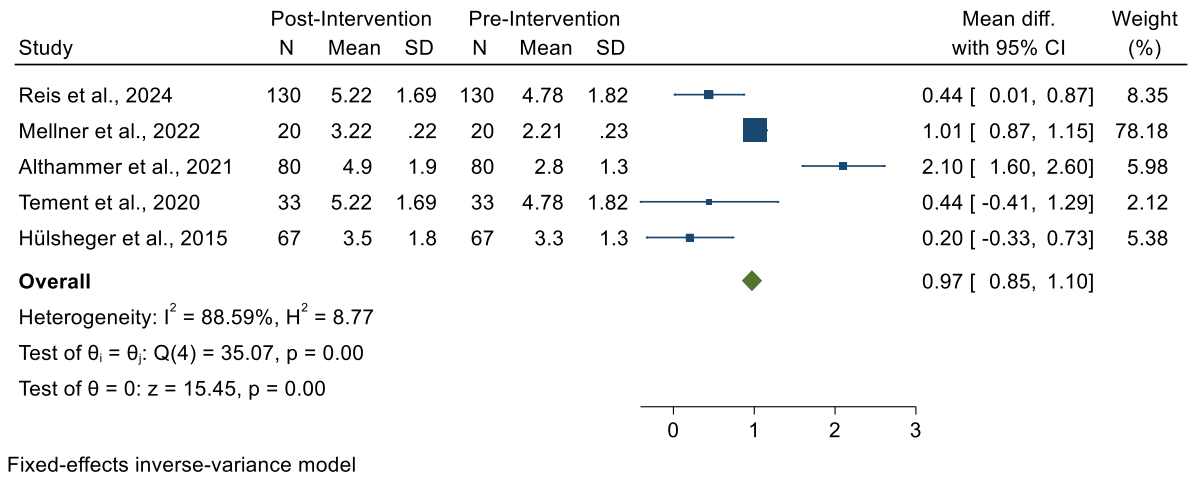

Figure 3. Forest plot showed the effect of mindfulness interventions on psychological detachment between pre and post intervention in mindfulness group

The mean differences of psychological detachment scores between post-mindfulness intervention and control group were 0.45 (MD = 0.45; 95% CI = [0.33–0.58]; p < 0.01; I^2 = 83.85%; p<0.01) with high heterogeneity between studies (Figure 3). A statistically significant difference could be observed between the post-mindfulness intervention and control group, such that an increase in the psychological detachment score was observed after the mindfulness intervention compared control group, meaning that the mindfulness intervention had a positive effect on psychological detachment.

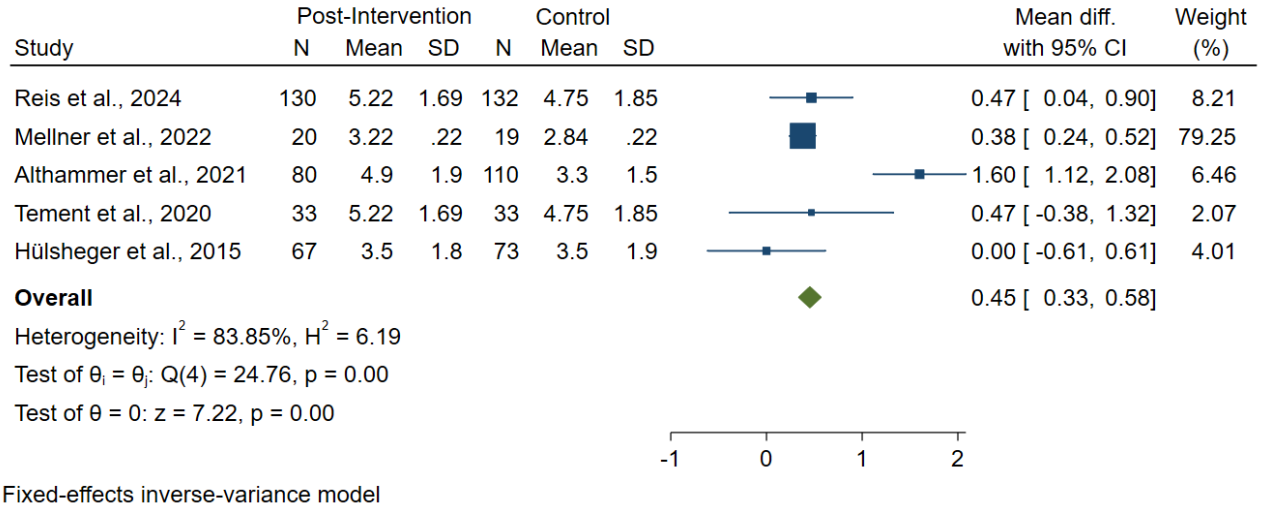

Figure 4. Forest plot showed the effect of mindfulness interventions on psychological detachment between post intervention in mindfulness group and control group

Discussion

The psychological detachment of the intervention groups improved significantly from pretest to posttest. Comparisons of mindfulness-based intervention approaches found similar overall effectiveness. Significant improvements in psychological detachment have been observed with mindfulness interventions.

The present study is the first meta-analysis that investigates the effectiveness of mindfulness on psychological detachment from work.

The present study highlights the importance of psychological detachment, which has been identified as a critical component of work-related recovery. This distancing helps prevent the accumulation of negative stress responses and prolonged physiological activation during a workday, thereby ensuring adequate rest and recovery (19). A possible explanation for the current finding that mindfulness practices can increase psychological detachment could be that psychological detachment is also closely related to psychological flexibility. This concept includes components of mindfulness and acceptance of one's own experiences, which have been shown to be a mechanism of change in intervention studies (16).

Given this mindfulness, an examination of the potential knock-on effects of leadership-based mindfulness interventions at the workplace level is needed, particularly with regard to their impact on critical criteria related to sustainable organizational development such as interpersonal relationships, collaboration, innovation, sick leave, and turnover. Practice can affect a variety of work and personal outcomes improve among managers. In this context, it is important to emphasize that although individual mindfulness is a prerequisite for the development of organizational mindfulness, it alone is not sufficient, since organizational mindfulness also depends on the social processes that take place within an organization (16, 20).

Applying mindfulness in the workplace can lead to a cycle of positive feedback that can impact not only the organization and its competitive environment, but also broader societal dynamics such as sustainable development. Because mindfulness influences processes on both an individual and organizational level (16, 21, 22). The current study thus highlights the need for additional research concentrating on the recently recognized interaction between individual mindfulness and group processes, relationships, and organizational strategies.

Conclusion

The present study contributes to the literature on recovery interventions by providing evidence that 2,6- and eight-week mindfulness-based interventions can effectively extent improve psychological detachment.

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