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Yoga in the workplace and health outcomes: a systematic review

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Background	Health promotion in the workplace is intended to enhance employee health and well-being. Yoga programmes are easy to implement and have been effective in the management of various health conditions.
Aims	To assess the evidence regarding the effectiveness of yoga programmes at work.
Methods	A search of electronic databases of published studies up until the 1st of April 2017. Inclusion criteria for the systematic review were randomized controlled trials of adult employees and yoga in the workplace. Quality appraisal was carried out using the Cochrane Collaboration's tool for assessing risk of bias in randomized trials.
Results	Of 1343 papers identified, 13 studies met the inclusion criteria. Nine out of 13 trials were classified as having an unclear risk of bias. The overall effects of yoga on mental health outcomes were beneficial, mainly on stress. Most of the cardiovascular endpoints showed no differences between yoga and controls. Other outcomes reported positive effects of yoga or no change.
Conclusions	The findings of this study suggest that yoga has a positive effect on health in the workplace, particularly in reducing stress, and no negative effects were reported in any of the randomized controlled trials. Further larger studies are required to confirm this.
Key words	Employees; healthy population; randomized controlled trials; workplace; yoga.

Introduction

Initially, occupational health services were concerned with the protection of workers from occupational hazards. More recently, they have looked to produce changes in individuals' health practices [1]. Health programmes at work aim to maintain and improve employees' health and well-being and reduce associated costs [2]. These programmes usually include appraisal of health risks, health education and stress management methods [1].

In recent years, interest in interventions for stress reduction, improvement of mental health and promotion of physical activity among workers has increased. Job stress has risen in numerous countries [3], together with a higher prevalence of mental health problems. For example, in the UK at any given moment, an estimated one in six working people have suffered symptoms related to mental illness [4], and each year an estimated 175 million days of work are lost; around half of these are due to stress [5]. Stress is associated with reduced job performance and increased costs for employers [6,7]. In addition, the National Institute for Health and Clinical Excellence (NICE) recommends increased physical activity within the workplace to improve well-being [5].

Yoga is a major area of interest in the field of workplace interventions and is also one of the traditional and complementary medicines included in the World Health Organization (WHO) traditional medicine strategy 2014–23 [8–10]. Yoga is an ancient Indian practice combining postural exercises (*Asana*) with breathing techniques (*Pranayama*) and meditation (*Dyana*) [11–13].

Key learning points

What is already known about this subject:

- A small number of studies had reviewed the effect of yoga programmes in work settings.
- Especially, evidence from randomized controlled trials had not been comprehensively summarized, including an overview of the efficacy of yoga on general health outcomes in employees.
- Consequently, this study aimed to collect and analyse this information.

What this study adds:

- Multiple trials reported mental health outcomes, principally stress, showing the beneficial effects of yoga compared with control groups.
- Yoga in the workplace had no negative effects on the variety of outcomes studied.
- Further studies with lower risk of bias, larger sample size and non-convenient sample selection are required.

What impact this may have on practice or policy:

- The information from this study could be used to develop yoga-targeted interventions to employees in order to reduce stress levels.
- However, there is a definite need for more high-quality studies to support the evidence of yoga at workplace scenarios.

The practice of yoga may have beneficial effects across various health outcomes [11]. Moreover, yoga can be learned independently of age or prior knowledge [14] and can be practised with minimal equipment [7,15].

A considerable amount of literature, including systematic reviews, has been published on the effects of yoga in the management of many health conditions, such as chronic back pain, depression and insomnia [12]. In contrast, fewer reviews on the effect of yoga work-based programmes on general health outcomes are available [7]. Gura's review in 2002 indicated that Hatha yoga had beneficial effects on health and well-being [7].

The focus of this systematic review was on workplace yoga programmes offered to employees. The objective was to evaluate the available evidence from randomized controlled trials (RCTs) assessing the effects of yoga at work. The explicit research question was whether yoga programmes offered to healthy employees in a workplace setting produced better health and work performance-related outcomes compared to no yoga or other interventions.

Methods

This systematic review was conducted according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) [16].

We conducted a systematic review up to 1st of April 2017 in the following electronic databases: PubMed, Embase (platform Ovid), PsycINFO (platform EBSCOhost) and the Cochrane Library (platform Wiley Online Library). In addition, we searched in the IndMED database (http://indmed.nic.in/), the WHO International Clinical Trials Registry Platform (http://apps.who.int/trialsearch/Default.aspx) and the US National Institutes of Health ClinicalTrials.gov (http://www.clinicaltrials.gov). We used Medical Subject Headings (MeSH) or equivalent and text terms around the key words 'yoga' and 'occupational' or 'employee' or 'organization' or 'work' or 'occupation' or 'worker'. The searches were adapted to individual databases. No publication status restrictions were applied. Reference lists of full-text articles were manually searched for additional studies.

In terms of eligibility criteria, RCTs that compared yoga offered at the workplace with no programme, another mind–body practice (such as meditation and relaxation techniques), physical activity (such as stretching) or minimal prevention programme (e.g. education through booklets about healthcare) were included. The publication had to be a peer-reviewed article and full text had to be available in English. Studies including exclusively employees older than 18 years were selected. The term employee involved only those workers who hold the type of job defined as paid employment job; therefore, students, retired adults and fulltime housewives were excluded. Studies that recruited volunteers outside of workplace settings, patients with any medical condition, pregnant women and yoga instructors were also excluded. If the main intervention was conducted at home, in the community or in clinical settings, the study was excluded. The included studies had to specify that the main intervention was 'yoga'. Studies were excluded if yoga was not the main intervention but a part of a multimodal intervention, for instance mindfulness-based stress reduction programmes. Yoga traditions that include any physical practice component (such as physical yoga postures) were included. Any frequency and length or duration of the yoga programme were included. Interventions based on yoga (e.g. stretching exercises based on yoga) but not characterized as yoga, or studies examining meditation, yoga breathing or yoga lifestyle without any physical practice, were excluded. Studies

including any mental health- or physical health-related outcome, as well as outcomes related to performance at work, were included. If available, adverse effects of the programmes were included.

Two authors independently reviewed the title, abstract and full text of each paper selected using the eligibility criteria. Discrepancies were rechecked, and consensus was achieved by discussion. Thereafter, details of the study design, setting, participant characteristics, interventions and outcomes (including methodological quality) were extracted from each selected study.

Considering the risk of underestimation or overestimation of the effect in any RCT, an assessment of the risk of bias was conducted using the Cochrane Collaboration's tool [17]. The trials should ensure that participants in intervention and comparison groups are comparable regarding known and unknown predictive characteristics. In consequence, one of the criteria included in the quality assessment is selection bias risk, which measures the conduction of an adequate randomization and allocation concealment in the study. Other criteria included the performance bias risk, measuring the degree to which participants and researchers were blinded in the trial. Further criteria comprised detection, attrition, reporting and other bias risks, which followed the guidance of the Cochrane Collaboration's. Additionally, we provided an appraisal of the overall risk of bias within each trial taking into account the relative importance of the different criteria [18].

A qualitative description of all the studies fulfilling the eligibility criteria was produced. For each reported outcome, the effect of yoga compared with the control group was described based on the original study findings. We decided not to perform a meta-analysis due to the diversity of the studies, regarding outcomes, study populations and interventions.

Results

The literature search retrieved 1343 papers of which 253 were duplicates. Through screening of title and abstracts, 54 studies were assessed for full-text evaluation. Of these, 41 did not meet the inclusion criteria. The reasons for exclusion are shown in Figure 1. Thirteen controlled trials with 1297 participants met the eligibility criteria for inclusion in the systematic review. Characteristics of the setting and sample population, interventions, outcomes assessment and main results are given in Table S1 (available as Supplementary data at *Occupational Medicine* Online).

Five of the trials were conducted in India [19–22], three in the USA [23–25], two in the UK [5,26] and one study each in China [27], Taiwan [28] and Sweden [11]. Three studies had interventions directed towards mental health professionals (two specifically to nurses) [23,27,28]; in three studies, the interventions targeted military personnel (air force, army, military base) [20,25,29]; and one study each concerned university staff [5], a software company [22] and a factory (industrial workers) [21]. Four studies targeted a specific subgroup of employees, with higher scores of stress [11,24,26] or counterproductive work behaviour [19] from an information technology firm, a local government authority, and an insurance and a financial company. Participants' mean age varied from 22 to 46 years. Women accounted for between 0 and 100% of the study participants and had sample sizes ranging from 28 to 205 participants.

An explicit type of yoga practice was stated in seven studies. From these, two described Kundalini yoga [11,23], two Dru yoga [5,26], two Hatha yoga [25,29] and one Vini yoga [24] as the yoga subtype of practice. These yoga practices have some subtle differences. Kundalini yoga incorporates additional sequences of physical postures and has a strong focus on meditation and breathing [30]. Dru yoga has distinctive soft and flowing movements mixed with breathing and visualization awareness [31]. Hatha yoga is a greater aerobic yoga style with a strong focus on physical fitness [32]. Lastly, Vini yoga emphasizes slow and comfortable breathing during all physical movements and allows many movement variations [33]. However, all three main components of yoga, postural exercises, breathing control and meditation [12], were included in the 13 RCTs. Duration and frequency of the yoga sessions varied between the 13 included studies. Programme length and intensity ranged from once weekly during 8 weeks [23,26] to six sessions per week during 6 months [29]. From the 13 studies, one had two control arms [24]. Ten studies compared yoga with no intervention [5,20–28]. In two studies, yoga was compared with physical exercises [19,29], and in one study each, yoga was compared with mindfulness-based stress management [24] and cognitive behaviour therapy [11].

The group of reported outcomes varied largely, details of the included trials with their outcomes are given in Table S1 (available as Supplementary data at *Occupational Medicine* Online). Nine studies reported diverse mental health outcomes using several self-report measures [5,11,19,23–28], two studies reported quality of life [11,25], while four trials reported cardiovascular outcomes [11,24,28,29]. In addition, other outcomes such as pain, biological stress markers and aerobic capacity were reported in one study each [11,20–22,24,26,29].

The risk of bias for each study included in the systematic review was assessed using the Cochrane Risk of Bias Tool [17] which includes seven criteria with rating 'yes', 'no' or 'unclear'. The summary of the risk of bias assessment for the 13 included studies is presented in Table 1.

In general, the risk of selection bias was unclear. Ten trials [5,11,20–24,26–29] did not specify any method for allocation concealment, while in six trials [11,20,23,24,28,29], the random numbers generator method was not stated, in consequence random sequence

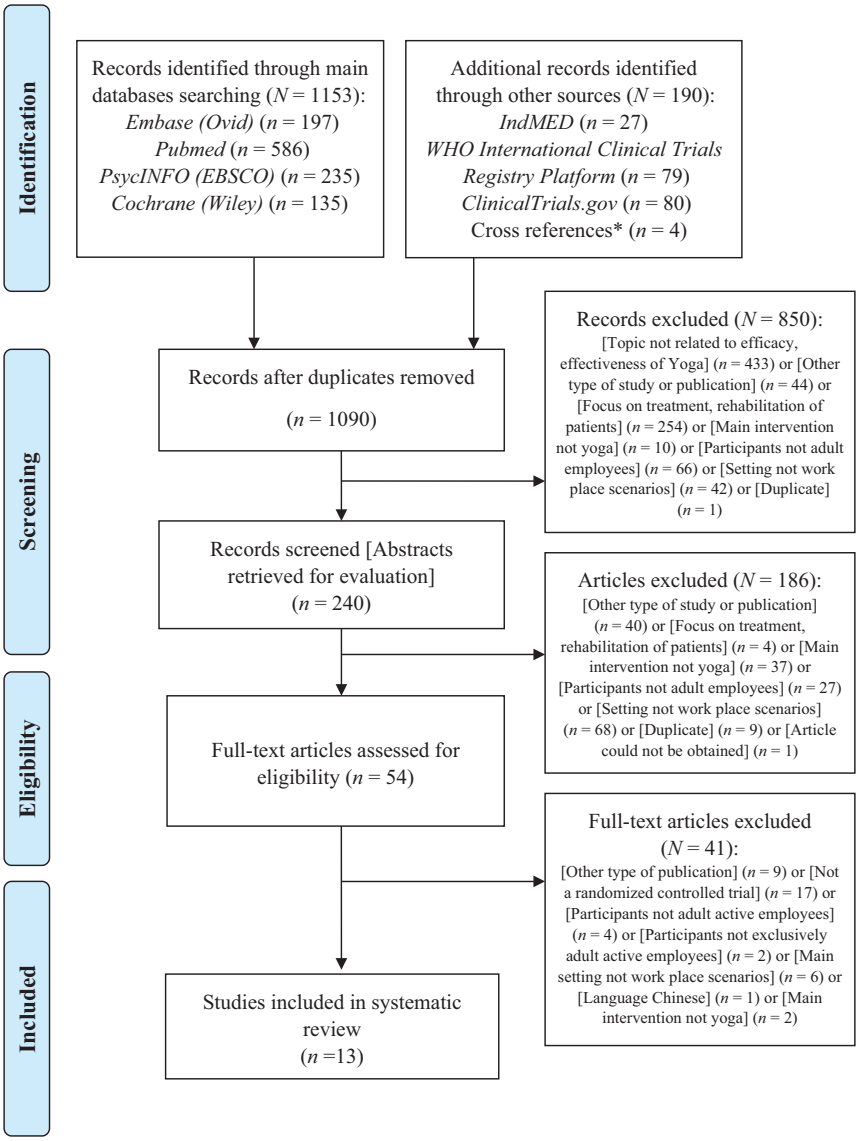

Figure 1. Study flow diagram.

generation was unclear. The risk of performance bias was high in all 13 trials. However, blinding of participants and personnel in trials with interventions such as yoga is very unlikely, if not impossible to achieve. In consequence, the risk of detection bias in the 10 trials with any subjective self-reported outcome [5,11,19,22–28] was high as well. Blinding of the researchers assessing objective outcomes was not specified in any of the seven trials reporting this type of outcomes [11,20–22,24,28,29], as a result the risk of bias was unclear. Risk of attrition bias was mixed; four trials [20,22,26,29] had a high risk because of no intention-to-treat analysis when losses of follow-up were highly likely to bias the results, five trials [19,23–25,28] had a lower risk and four trials [5,11,21,27] had an unclear risk. Risk of reporting bias was unclear in all but three trials [11,20,29] where the risk was high, due to incomplete analysis of more than one outcome of interest. Protocols of the trials were not retrievable through any of the 13 studies. Other risks of bias are unclear in nine trials [5,11,20,21,23,24,26,27,29] as a result of insufficient information available to judge whether blinding of researchers at any stage. Overall, 9 out of 13 trials were classified as having an unclear risk of bias [5,11,21–24,26–28].

With respect to mental health outcomes, different types of stress were reported in five included trials [11,24,26–28]. Four studies reported significant positive effects of yoga compared with no intervention [24,26–28], while one study comparing yoga with cognitive behaviour therapy did not report the results [11]. The two studies describing Perceived Stress Scale (PSS) scores showed a beneficial effect of yoga compared with no

Table 1. Summary of risk of bias assessment of the 13 included studies using the Cochrane Risk of Bias Tool [17]

Bias	Selection bias		Performance bias	Detection bias	Attrition bias	Reporting bias	Other bias	Overall risk of bias within the trial[a]
	Random sequence generation	Allocation concealment	Blinding participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting	Other sources of bias	
Alexander (2015) [23]	Unclear	Unclear	High[b]	High	Low	Unclear	Unclear	Unclear
Dwivedi (2015) [19]	Low	Low	High[b]	High	Low	Unclear	Low	Low
Fang (2015) [27]	Low	Unclear	High[b]	High	Unclear	Unclear	Unclear	Unclear
Lin (2015) [28]	Unclear	Unclear	High[b]	High[c]/Unclear	Low	Unclear	Low	Unclear
Pal (2015) [20]	Unclear	Unclear	High[b]	Unclear	High	High	Unclear	High
Rajbhoj (2015) [21]	Low	Unclear	High[b]	Unclear	Unclear	Unclear	Unclear	Unclear
Hartfiel (2012) [26]	Low	Unclear	High[b]	High	High	Unclear	Unclear	Unclear
Stoller (2012) [25]	Low	Low	High[b]	High	Low	Unclear	Low	Low
Wolever (2012) [24]	Unclear	Unclear	High[b]	High[c], Unclear	Low	Unclear	Unclear	Unclear
Hartfiel (2011) [5]	Low	Unclear	High[b]	High	Unclear	Unclear	Unclear	Unclear
Telles (2009) [22]	Low	Unclear	High[b]	High[c], Unclear	High	Unclear	Low	Unclear
Granath (2006) [11]	Unclear	Unclear	High[b]	High[c], Unclear	Unclear	High	Unclear	Unclear
Ray (2001) [29]	Unclear	Unclear	High[b]	Unclear	High	High	Unclear	High

Unclear: unclear risk of bias in the specified criteria; mainly due to not enough available information.
Low: low risk of bias in the specified criteria; the study describes properly measures to avoid this type of bias.
High: high risk of bias; there is highly likely that correct measures to avoid the type of bias were not performed.
[a]Criteria unlikely to be avoidable (such as high risk of performance bias) were not included in the judgement of the overall risk of bias within the trial.
[b]In studies with behavioural interventions such as yoga, it is difficult, if not impossible to blind participants and personnel [12]. In consequence, there is a high risk of performance bias, but it is not likely to be avoidable.
[c]Two main class of outcomes assessed separately; subjective (self-rated scale) and objective outcomes in the same trial with differences in the risk of bias assessment.

intervention ($P < 0.01$) [26] and a difference in scores between yoga, mindfulness-based stress programme and no intervention group ($P < 0.001$) [24]. Each of the studies assessing work-related stress in health professionals reported a significant improvement in work stress scores [27,28]. One reported a proportion difference of 41% (95% confidence interval [CI] 22.25–56.12) and $P < 0.001$ [27], and the other one reported a mean difference of −27.78 with an SE of 8.64 and $P < 0.01$ [28]. On the contrary, no significant effect of yoga on stress adaptation (changes to stress regulation, comprising problematic and emotional adjustments) was reported [28].

The effects of yoga on sleep quality were beneficial in the two studies. One compared yoga with no intervention in nurses and reported a mean difference of −2.70 (95% CI −3.44 to −1.96) and $P < 0.001$ [27]. The second reported a difference in sleep quality scores between yoga, mindfulness-based stress intervention and no intervention with $P < 0.05$ [24].

Two individual studies that included mindfulness as an outcome reported no significant findings when comparing yoga with the control group. The first study was conducted in nurses and compared yoga with no intervention describing a mean difference of 3.95 (95% CI −0.66 to 8.56) [23]. The other study showed no significant difference between yoga, mindfulness-based stress programme and no intervention [24].

In the group of subjective and psychological well-being outcomes, positive affectivity reported by one trial with an overall low risk of bias showed a significant enhancement in the yoga group compared with the physical exercise group ($P < 0.001$) [19]. Furthermore, psychological well-being scores reported by one trial were higher in participants who practised yoga compared to participants who did not receive any intervention ($P < 0.001$) [26]. In the same way, emotional well-being measured by six dimensions showed improvement in all ($P < 0.05$) but one dimension (agreeable–hostile) when comparing yoga with no intervention in one trial [5].

Regarding further mental health outcomes, in one trial of nurses, professional burnout measured by the Maslach Burnout Inventory, which contains three domains, showed an improvement in emotional exhaustion by a mean difference of −7.65 (95% CI −14.41 to −0.86) and in depersonalization by a mean difference of −2.65 (95% CI −5.28 to −0.02) but not in personal accomplishment when yoga was compared with no intervention [23]. Aggression scores reported by one trial were reduced in the yoga group compared with the physical exercise group ($P < 0.001$) [19]. In another trial with an overall low risk of bias, on the one hand, no effects of yoga compared with no intervention were found in sensory processing outcomes, whereas on the other hand yoga was effective in reducing anxiety state and trait ($P < 0.001$) [25]. With reference to depression, yoga did not produce better effects when compared with mindfulness-based stress management intervention or

no intervention [24]. A self-care outcome measured in one trial showed improvement in the yoga arm compared to no intervention with a mean difference of 0.39 (95% CI 0.14–0.64) [23].

In one trial with low risk of bias, in which the results of quality of life were reported, yoga showed an improvement ($P > 0.05$) in 16 of 18 mental health and quality-of-life factors when compared with no intervention [25]. In another trial of university employees, the measurement of positive psychological attitudes such as life purpose satisfaction and self-confidence during stress showed improvement in the yoga group compared with no intervention ($P < 0.01$) [5].

In terms of cardiovascular outcomes, two studies measured blood pressure [11,24]. A study conducted on employees from an insurance company reported no difference between systolic or diastolic blood pressure values in the yoga group compared with mindfulness-based stress management or no intervention group [24]. Likewise, a study comparing yoga with cognitive behaviour therapy in employees from the financial sector reported no different effect of yoga on diastolic blood pressure [11].

The studies measuring heart rate variability showed no improvement of the low-frequency range component (LF) or the high-frequency range component (HF) in the yoga intervention group compared with no intervention, whereas the LF/HF ratio increased. To compare the groups change of scores mean difference with a P cut value of 0.05 were used [28]. The other study measuring heart rate variability reported a change in the heart rhythm coherence ratio between yoga, mindfulness-based stress and no intervention ($P < 0.001$), whereas no variations were found in the RR interval (time between heart beats) between the three comparison groups ($P > 0.05$) [24].

Other outcomes, for instance pain, biological stress markers and aerobic capacity reported in only one study, showed no effects, a positive effect of yoga (comparisons resulted in $P < 0.05$) or the results were not reported. With respect to pain, yoga had no effect or a positive effect, depending on the type of pain measured [22,24]. Musculoskeletal flexibility was positively affected by yoga in comparison with no intervention [22]. No effects of yoga were found on urinary catecholamine levels and the results were not reported in the case of cortisol levels [11]. In contrast, positive effects of yoga were found on interleukin 1 beta and interleukin 10 measured in blood [21]. Results from the comparison between yoga and the control group in trials that measured aerobic capacity and resting physiological conditions were not reported [20,29]. No effects of yoga on productivity loss compared with no intervention and mindfulness programme were found [24]. Likewise, no effects on hand grip strength or tapping speed were observed [22].

The detailed effects of yoga work-based programmes for all the outcomes including the statistical comparisons and the effect size when available are given in Table S1 (available as Supplementary data at *Occupational Medicine* Online). No adverse effect of yoga programmes was reported in any of the trials.

Discussion

We identified 13 RCTs that examined the effect of yoga offered exclusively to employees in workplace settings. Male and female office employees, health professionals, military personnel and industrial workers in India, USA, UK, China, Taiwan and Sweden were studied. A large variety of outcomes were reported; however, primarily mental health outcomes were found. Risk of bias of the trials was mainly unclear (9 out of 13). Stress was the most frequently reported outcome in the trials (5 of 13). Four trials showed positive effects of yoga on stress compared with control groups (measured by diverse test comparisons). For other mental health outcomes, results were varied: yoga in trials measuring sleep quality reported better effects compared with controls, but in the case of mindfulness, both groups showed similar results. In terms of subjective and psychological well-being outcomes, three trials showed a difference favouring yoga over controls. However, most of the cardiovascular outcomes resulted in no significant difference between yoga and control groups. No adverse effects of yoga were reported in any trials.

The effects of yoga in workplace settings were measured using a wide range of outcomes. This was expected as the population of the 13 trials varied greatly and the potential effects of yoga are diverse, involving physiological and mental health-related outcomes [11,34]. Furthermore, since certain groups of employees are more prone to particular syndromes or diseases [9], the outcome of interest depended on the study population. For example, in the trials with employees from the army, oxygen consumption and sensory processing were the main outcomes [20,25,29].

Although a variety of outcomes were found, mostly mental health endpoints, and in particular stress, were reported in the 13 trials. Only recent investigations considered the study of yoga on physiological markers [35], and the most commonly studied effects of yoga were in the field of mental health [36].

The beneficial mental effects of yoga have been recognized and it has been used to reduce stress [12,36]. Moreover, stress is frequent and particularly important in employees who have an occupation that requires low physical activities (e.g. office workers) [37]. Stress was the most common reported outcome in the included studies. The PSS employed in three of the studies [11,24,26] is an extensively self-reported measure of psychological stress during the last month and has been used as an outcome measure in several studies [38,39]. The PSS has 10 questions with a total score ranging between 0 and 40

[40]. Interpretation of the effect size is not straight forward, taking into account that the PSS is not a diagnostic instrument and cannot classify participants in groups of stress levels as low, medium or high [41]. However, a change in scores between the yoga group and controls was reported in two of the trials ($P < 0.01$), which means that an overall reduction of stress in employees practising yoga was larger than in those not performing yoga. It is important to consider that these two trials had an unclear risk of bias and small sample size ($n = 143$ and $n = 59$). Nonetheless this reduction is promising, considering that yoga was only taught for 8 and 12 weeks. Furthermore, this reduction is in line with the results of a systematic review about yoga as a stress management strategy [42]. In this review, three of four studies conducted in a healthy population showed a reduction in perceived stress scores in the yoga group [42].

In the case of work-related stress, a positive effect in health professionals practising yoga was reported in two studies with an unclear risk of bias [27,28]. The results of one of the trials show that there was a higher proportion of low-stressed participants in the yoga group. The scale employed is validated and applied in various Taiwanese healthcare settings [43]. The other trial reported a mean difference of −27.78 (SE 8.64; $P = 0.01$) between yoga and control, and the work-related stress scale by Lan (2004) was employed [28]; however, this scale is a very specific instrument, and not widely applied. Consequently, the interpretation of the meaning of this reduction is uncertain.

Most of the mental health outcomes resulted in positive effects of yoga; for example, sleep quality improvement in two trials with unclear risk of bias [24,27], consistent with other studies showing a beneficial effect of yoga on sleep quality and a reduction of insomnia, has been reported in special populations, such as postmenopausal women and geriatric patients [44,45].

In contrast, most of the cardiovascular outcomes did not result in distinct effects of yoga; no significant differences were found between comparison groups. Furthermore, other outcomes such as pain reported beneficial or no effects of yoga programmes. In general, therefore, it seems that yoga had no adverse effect but not always showed an improvement of the outcomes. It is important to consider that most of the trials included in this systematic review had an overall unclear risk of bias, mainly because of unclear allocation concealment and selective reporting. Allocation concealment or preventing knowledge of the next participant assignment (into the intervention or the control group) is necessary to avoid selection bias. The foreknowledge of intervention assignment could cause selective enrolment of participants. In the case of unclear selective reporting, the specific concern is the possibility that only positive results are reported in the publication leading to bias [18]. More information is needed to assess the quality of the studies. In addition, blinding of participants and personnel in trials with behavioural interventions is almost impossible. The validity of the results could be affected by performance bias. Knowing the intervention group may affect the outcomes, participants randomly allocated to the intervention might put more effort on changes in behaviour than participants from the control group [46]. However, as already mentioned, it is usually impossible to blind participants in a study with an intervention like yoga [18].

Of the 13 trials included in this systematic review, most of the outcome variables were subjective. The weight of this issue was indirectly addressed in the risk of bias assessment; however, information about reliability and validity of the instrument to measure each outcome has to be considered in order to make a deeper analysis. For example, the most common scale to measure stress, the PSS, had appropriate reliability and validity [47], but the evidence about validity and measurement error of the instruments assessing mindfulness is insufficient [48].

In terms of external validity of the results, convenience samples to select potential participants were used in all the included studies. The samples used in randomized clinical trials are usually convenient [49,50]; as a consequence, the external validity of the results is compromised. In addition to the convenience sample, generalizability is restricted because of the population selected in some of the trials. Four of 13 studies included a specific subgroup of employees, the ones with higher scores of stress [11,24,26] or counterproductive work behaviour [19]. Furthermore, overall sample size of the individual trials was small, the biggest trial considered around 200 participants [24].

One of the strengths of the review is the method of identifying relevant trials and the relative high sensitivity of the literature search. Use of additional databases such as Indmed, clinicaltrials.org and WHO platform increases sensitivity. In particular, the use of a database from India (IndMED) involves a consideration about an essential geographic source of data, taking into account that yoga originated in India several centuries ago [12]. However, to have a broader view of the evidence, there is a need to search other Indian literature, Indian languages or other languages besides English.

Future randomized controlled studies, which specify explicitly their methods, are needed in order to have a clearer assessment of risk of bias. The analysis of more studies with lower risk of bias, larger sample size and the inclusion of studies with non-convenient sample selection would lead to a broader applicability of the results.

The results of this systematic review show that yoga for employees has been measured according to a variety of outcomes. The systematic review results show that yoga in the workplace had no negative effects on the various outcomes studied.

Taken together, these findings suggest a role for yoga in promoting health in the workplace. However, the evidence comes from few studies, with small sample sizes and unclear risk of bias.

Competing interests

None declared.

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