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A systematic review of brief mental health and well-being interventions in organizational settings ¹

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¹ Appendices

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Appendix 1. Complete search strategy for MEDLINE

1. exp workplace/ or exp organizations/

2. ("organi*ation*" or "work*" or "employ*" or "busines*" or "job*" or "labor" or "labour" or "corporat*" or "occupation*" or "vocation*" or "manage*" or "career*" or "industr*" or "compan*").tw.

3. 1 or 2

4. exp mental health/ or exp job satisfaction/ or exp occupational health/ or exp stress,psychological/ or exp burnout,professional/

5. ("well-being" or "wellbeing" or "well being" or ("mental" adj ("health" or "well-being" or "wellbeing" or "well being"))) or ("psychological" adj ("well-being*" or "wellbeing" or "well being"))) or "work satisfaction" or "job satisfaction" or "burnout" or "burn out" or "burn-out").af.

6. (("psychological" or "industrial" or "employee*" or "occupational") adj3 health).af.

7. (("life" or "psychological" or "emotional" or "mental" or "occupational" or "work*" or "job")
adj3 stress).af.

8. 4 or 5 or 6 or 7

9. exp program evaluation/ or exp health promotion/ or exp prevention,primary/ or exp
prevention,secondary/

10. ("promot*" or "interven*" or "effect*" or "eval*" or "prevent*" or "program*")af.

11. 9 or 10

12. exp randomized controlled trial/ or exp longitudinal studies/ or exp follow-up studies/ or exp
prospective studies/ or exp random allocation/ or exp cohort studies/ or exp evaluation studies/

13. ("random*" or "clinic* trial*" or "longitudin*" or "follow up" or "follow-up" or "followup" or
"prospective" or "cohort*" or "quasi experiment*" or "quasi-experiment*" or "case-control").af.

14. 12 or 13

15. 3 and 8 and 11 and 14

16. exp clinical trial phase I/ or exp clinical trial phase II/ or exp qualitative research/ or exp cross-
sectional studies/

17. ("ecologic stud*" or "case report*" or "case series" or "case stud*" or "econom* evaluat*" or
"cross-section*" or "cross section*").ab.

18. 16 or 17

19. 15 not 18

20. exp children/ or exp patients/

21. ("bacter*" or "plant*" or "homeless*" or "animal" or "vaccin*" or "surger*" or "HIV" or "juven*" or "infant*" or "adolesc*" or "gynecolog*" or "dement*" or "veteran*" or "adhd*" or "virus" or "viral" or "postmenopaus* wom*n" or "immun* function*" or "schizophren*" or "cancer" or "medic* treatment*" or "occupation* therap*" or "patient*").tw.

22. 20 or 21

23. 19 not 22

24. limit 23 to (yr="2000 - 2016" and (english or german) and humans)

Appendix 2. Characteristics of the included studies

Reference	Intervention	Participants	Sample size	Study design	Comparison group(s)	Outcome measures	Results	Methodological quality
Brief interventions								
Bost & Wallis (2006, ref. 29) Australia	Name of the intervention: Massage Number of sessions: 4 Session duration: 20 min Session frequency: weekly Delivery mode: face-to-face	Nurses in acute care hospital	N = 60 I = 30 (27) C = 28 (21)	RCT	Control group	State-Trait Anxiety Inventory (STAI) Mean arterial blood pressure Urinary cortisol levels	Anxiety symptoms - decreased for the intervention and increased for the control group. No significant differences between groups in urinary cortisol and blood pressure.	Allocation - a random envelope and number system. Participants were not blinded. Attrition rate – 20%. Duration of follow-up – 1 week. Risk of bias - high
Kawaharada et al (2009, ref. 34) Japan	Name of the intervention: Stress Inoculation training (SIT) Number of sessions: 3 Session duration: 1 hour Session frequency: every 4 weeks Delivery mode: face-to-face	Public organization office workers	N = 134 I = 68 C = 66	Quasi-experiment	Control	Primary outcome: Ways of Coping Checklist (WCCL) Secondary outcome: Perceived Health Competence Scale (PHCS) Brief Job Stress Questionnaire (BJSQ)	Significant development of problem-solving skills and positive cognition for the intervention group, with a significant effect remaining 1 month after the intervention. The effect sizes in the intervention group showed a small-to-medium change in problem-solving coping and small changes in positive cognitive coping.	Allocation – no randomization, participants could join whatever group they wanted. Attrition rate – 12.3% Duration of follow-up – 1 month Risk of bias – high

							No intervention effects found in response to stress and health competence.	
Kawai et al (2010, ref. 35) Japan	Name of the intervention: Web-based stress management program Number of sessions: 4 Session duration: 10-25 min Session frequency: weekly Delivery mode: online	White collar workers	N = 168	Quasi-experiment	No control group	Psychological well-being scale (PWB) Center for Epidemiologic Studies Depression Rating Scale (CES-D)	Psychological well-being - significant increase for participants with higher psychological well-being at the baseline. Participants whose evaluation of the program sessions was more positive achieved greater psychological well-being improvement and relieved depression. The program can be effective if the participants feel enjoyment, find the program informative to increase their coping strategies and self-efficacy belief that they want to increase this ability.	Allocation - no control group Attrition rate – 28% Duration of follow up – pre-post test Risk of bias - high
Kirk et al (2011, ref. 36) Australia	Name of the intervention: Expressive writing intervention Number of interventions: 3 Session duration: 20 min Session frequency: daily Delivery mode: self-administered	All employees	N = 49 I = 22 C = 24	RCT	Active control	Emotional Self-Efficacy Scale Assessing Emotions Scale Positive Affect and Negative Affect Schedule (PANAS) Uncivil Workplace Behavior Questionnaire (UWBQ)	Emotional self-efficacy - significant increases for those in the intervention condition, with lower pre-test scores. Emotional intelligence - increased in the intervention group, with large size effect. Positive affect - increased in the intervention group, with medium-to-large effect.	Allocation – alternate randomization Active control group Attrition rate – 6.10% Duration of follow up – 2 weeks Risk of bias –high

							Negative affect - no significant effect of the intervention. Workplace incivility - decreased in the intervention group, with medium-to-large effect.	
Mackenzie et al (2006, ref. 30) Canada	Name of the intervention: Mindfulness-based stress reduction Number of sessions: 4 Session duration: 30 min Session frequency: weekly Delivery mode: face-to-face, CD of guided mindfulness exercise	Nurses and nurse aides in geriatric teaching hospital	N = 30 I = 16 C = 14	RCT	Waiting list control group	Maslach Burnout Inventory (MBI) Smith Relaxation Dispositions Inventory (SRDI) Intrinsic Job Satisfaction subscale from Job Satisfaction Scale (JSS) Satisfaction with Life Scale (SWLS) Orientation to Life Questionnaire (OLQ)	Significant improvements in burnout symptoms, relaxation, and life satisfaction for the intervention group. Size effects were small for emotional exhaustion and life satisfaction and insignificant for depersonalization and relaxation.	Allocation - no information on a randomization method. Baseline differences between I and C on emotional exhaustion Attrition rate – n/a Duration of follow-up – pre-post test Risk of bias - high
McElligott et al (2003, ref. 31) USA	Name of the intervention: AMMA therapy Number of sessions: 4 Session duration: 45 min Session frequency: weekly Delivery mode: face-to-face	Nurses in tertiary care center	N = 30 I = 15 (12) C = 15 (8)	Quasi-experiment	Active control group	Visual Analog Scale (VAS) Physiologic Parameter Sheet	Trends of decreased anxiety symptoms after the treatment, but no statistically significance. No significant difference between groups in physiologic parameters.	Allocation - first 30 eligible participants randomly assigned to I or C group Active control group Attrition rate – 33.33% Duration of follow-up – pre-post test Risk of bias - high

Pollak Eisen et al (2008, ref. 38) USA	Name of the intervention: Cognitive-behavioural stress management Number of sessions: 2 Session duration: 10 min per module + 2 min mini-relaxation (computer-based) 55 min (face-to-face) Session frequency: weekly Delivery mode: face-to-face, computer-based	Employees of the manufacturing company	N = 288 Computer-based = 123 Face-to-face = 134 C = 31	RCT	Waiting list control	Johnson & Johnson Health Care System <i>Insight</i> Health Risk Appraisal survey Occupational Stress Inventory – Revised Edition (OSI-R) Subjective Units of Distress (SUDS) Skills practice frequency record	Significant reductions in immediately-reported stress for both intervention groups. Stress reduction, however, was not associated with improvement in longer-term indices of workplace stress following completion of the intervention and at a one-month follow-up.	Allocation - no information on randomization method Attrition rate - significantly higher in the computer-presentation format Face-to-face group = 64% Computer-based = 88% Duration of follow-up – 1 month Risk of bias - high
Ranta & Sud (2008, ref. 32) India	Name of the intervention: Multidimensional intervention Number of sessions: 3 Session duration: 60 min Session frequency: every other day Delivery mode: face-to-face	Police personnel	N = 80 I = 40 C = 40	RCT	Active control group	Police Stress Questionnaire Maslach Burnout Inventory (MBI)	Significant decrease in job stress, emotional exhaustion and depersonalization for the intervention group, regardless of the ranks of police personnel. Intervention showed medium, large and medium effect, respectively.	Allocation – no information on the randomization method Active control group (relaxation training) Attrition rate – n/a Duration of follow-up - pre-post test Risk of bias - high
Sutarto et al (2012, ref. 39) Malaysia	Name: HRV biofeedback training Number of sessions: 5 Session duration: 30 - 50 minutes Session frequency: weekly Delivery mode: face-to-face	Female employees of the manufacturing company	N = 36 I = 19 C = 17	RCT	Active control	Depression, Anxiety and Stress Scale and Stress Scale (DASS) Physiological measures	Depression, Anxiety and Stress Scale - significant decrease in an intervention group Physiological Stress Profile - significant increase in LF activity in an intervention group, participants learned how to effectively regulate activity	Allocation - no information on the randomization method Groups equal at baseline. Sample contains only females. Attrition rate – 10%

Bond & Bunce (2000, ref. 40)	Name of the intervention: Acceptance and commitment therapy (ACT) Innovation Promotion Program (IPP) Number of interventions: 3 Session duration: 3.25hr Session frequency: two sessions weekly, the last one after 3 months Delivery mode: face-to-face	Employees in media organization	N = 90 ACT = 30 (24) IPP = 30 (21) C = 30 (20)	RCT	Wait-list control	General Health Questionnaire-12 (GHQ) Beck Depression Inventory (BDI) Intrinsic job motivation Intrinsic job satisfaction Propensity to innovate	Significant improvements in general mental health, depressive symptoms and propensity to innovate for the ACT group. Significant improvements in depressive symptoms and propensity to innovate for the IPP group. No change in job satisfaction and motivation.	Allocation - no information on randomization method For each session, participants chose the ACT or IPP meeting that best fitted their schedules. Attrition rate – 27.77% No difference in attrition rate between groups Duration of follow-up – 3 months Risk of bias - low
Elder et al (2014, ref. 41)	Name of the intervention: Transcendental Meditation Number of interventions: 3 Session duration: - Session frequency: weekly Delivery mode: face-to-face	Teachers and support staff of a therapeutic school for children with behavioural problems	N = 40 I = 20 C = 20	RCT	Wait-list control	Perceived Stress Scale (PSS) Mental Health Inventory-5 Maslach Burnout Inventory-Educators Survey	Significant reduction of all main outcome measures: perceived stress, depression and overall teacher burnout Effect sizes ranged from 0.40 to 0.94.	Allocation - concealed allocation procedure Participants could not be blinded Attrition – 10% Duration of follow-up – 4 months Risk of bias - high

Jennings et al (2013, ref. 42) USA	Name of the intervention: Cultivating Awareness and Resilience in Education (CARE) Number of interventions: 5 Session duration: whole day Session frequency: weekly, every few weeks Delivery mode: face-to-face	Teachers of two public schools	N = 50	RCT	Control group	Positive and Negative Affect Schedule (PANAS) Emotion Regulation Questionnaire (ERQ) Center for Epidemiologic Studies Depression Scale (CES-D-20) Daily Physical Symptoms (DPS) Teachers' Sense of Efficacy Questionnaire (TSES) Maslach Burnout Inventory (Educators' Survey, MBI) Time Urgency Scale (TUS) Five Facet Mindfulness Questionnaire (FFMQ) CARE Acceptability Questionnaire (CAQ)	No significant improvement in emotional exhaustion or depersonalization.	Allocation – no information on the randomization method Majority of sample women Groups equal at baseline Attrition – 5.6% Follow-up – pre-post test Risk of bias - high
Kaplan et al (2014, ref. 47) USA	Name of the intervention: Gratitude / Social connectedness intervention Number of interventions: 6 Session duration: Session frequency: 3 x week Delivery mode: online	Office staff members from two universities	N = 112 (US) Gratitude = 33 Social connectedness = 34	Quasi-experiment	No control group	Gratitude adjective checklist (GAC) Social Connectedness Scale Job-Related Affective Well-being Scale (JAWS) Absence due to illness	Gratitude - self-reported gratitude increased for the gratitude group. Social connectedness - no change in self-reported social connectedness in social connectedness group. Affective well-being - positive and negative affective well-being increased for the	Allocation - no information on randomization method Participants were familiar with the purpose of the study Majority of sample women - 86.6%

							gratitude group, however negative affect didn't drop significantly. There was no change in positive and negative affect within social connectedness group. Absence due to illness - significant decrease in both gratitude and social connectedness group.	No control group - two intervention groups Attrition – 40% Follow-up – 1 month Risk of bias - high
Page & Vella-Brodrick (2012, ref. 48) Australia	Name of the intervention: Working for Wellness Program Number of interventions: 6 Session duration: 1 hour Session frequency: weekly Delivery mode: face-to-face	Government agency employees	N = 61 I = 31 C = 30	RCT	Waiting list control	Satisfaction with Life scale (SWLS) Positive and Negative Affect Schedule (PANAS) The Workplace Well-being Index (WWBI) The Affective Well-Being (AWB) Scale Scales of Psychological Well-Being (SPWB)	Subjective and psychological well-being improved significantly across the time in the intervention group, however these effects have reduced by last assessment point. Work-related well-being - significant improvement of affective well-being for the intervention group across time.	Allocation - online program randomization procedure No baseline differences between groups 73% of a sample women Attrition – 55.74% No differences between dropouts and those who completed all time points Duration of follow-up – 6 months Focus groups - 1 year follow-up. Risk of bias – low

Shimazu et al (2006, ref. 44) Japan	Name of the intervention: Small group stress management program Number of interventions: 1 Session duration: 2 hours Session frequency: - Delivery mode: face-to-face	Employees of the construction machinery company	N = 296 I= 149 C = 147	Quasi-experiment	Wait-list control	Knowledge Brief Scales for Coping Profile (BSCP) Brief Job Stress Questionnaire (BJSQ)	Significant intervention effects were found coping skills and adverse effects on psychological distress. Size effects were small.	Allocation – no information on the randomization method Groups unequal in gender, knowledge and physical complaints at baseline Attrition – 3% Dropouts higher score on knowledge than completers An adverse intervention effect was found on psychological distress Follow-up – pre-post test Risk of bias - high
Stafford-Brown & Paenham (2012, ref. 43)	Name of the intervention: Acceptance and commitment therapy (ACT) Number of interventions: 4 Session duration: 4 hours Session frequency: weekly Delivery mode: face-to-face	Clinical psychology trainees	N = 56 I = 28 C = 28	Quasi-experiment	Wait-list control	Mental Health Professional Stress Scale General Health Questionnaire-28 (GHQ-28) Satisfaction with Life Scale Self-Compassion Scale Counsellor Activity Self-Efficacy Scales- Helping Skills Scale	Borderline significant improvement in life satisfaction.	Allocation - no randomization, mainly female participants, some were familiar with ACT Attrition – 3.57% Duration of follow-up – 10 weeks Risk of bias - high

						Working Alliance Inventory-Short Form Acceptance and Action Questionnaire Five Facet Mindfulness Questionnaire White Bear Suppression Inventory (WBSI) Valued Living Questionnaire		
Umanodan et al (2014, ref. 45) Japan	Name of the intervention: Stress management Number of interventions: - Session duration: self-paced Session frequency: - Delivery mode: computer-based	Manufacturing company employees	I = 142 C = 121	RCT	Wait-list control	Brief Job Stress Questionnaire (BJSQ) Job Satisfaction (BJSQ) Utrecht Work Engagement Scale (UWES-J) Health and Work Performance Questionnaire (HPQ) Secondary outcome Brief Scales for Coping Profile (BSCP) Social support (BJSQ) Knowledge	Intervention increased participants' knowledge about stress and was effective in improving coping skills in instances where participants had enough time (at least 3 d) to complete all sessions. The change on other outcome measures was not statistically significant.	Allocation – no information on the randomization method Groups unequal at baseline on work engagement Differences in distress and social support seeking between completers and dropouts Attrition – 14% Follow-up – 2 months Risk of bias - high
Zolnierczyk - Zreda (2002, ref. 46) Poland	Name of the intervention: Stress management Number of interventions: 10 Session duration: 4 hours Session frequency: weekly Delivery mode: face-to-face	Workers of financial sector	N = 85 I = 40 C = 45	RCT	Control	Coping Inventory for Stressful Situation (CISS) Polish version of Bradburn's questionnaire	Intervention was effective in increasing the problem-focused coping. There was no significant change in emotion-focused coping.	Allocation – no information on the randomization method Attrition – 5.55% Follow-up – pre-post test Risk of bias - high

Appendix 3. Estimated effect sizes (Cohen's d) of brief and common interventions.

Reference	Intervention type	Outcome measures	Cohen d
Kawaharada et al (2009, ref. 34) Japan	Stress management Brief	Coping	
		Problem solving	0.18
		Positive cognitive coping	0.17
		Seeking social support	0.20 *
		Self-blame	0.11
		Wishful thinking	0.03
		Avoidance	0.13
		Health competence	0.32 *
		Psychological stress response	
		Vigor	0.18
Shimazu et al (2006, ref. 44) Japan	Stress management Long	Coping skills	0.25 *
		Psychological distress	0.21 *
Umanodan et al (2014, ref. 45) Japan	Stress management Long	Psychological distress	0.16
		Seeking social support	0.33 *
		Avoidance and suppression	0.18
		Problem solving	0.31 *
Zolnierczyk – Zreda (2002, ref. 46) Poland	Stress management Long	Problem-focused coping	0.07
Kirk et al (2011, ref. 36) Australia	Positive psychology Brief	Emotional intelligence	1.33 ****
		Positive affect	0.75 **
		Negative affect	0.35 *
		Incivility perpetration	-0.77 **

Reference	Intervention type	Outcome measures	Cohen d
Zhang et al (2014, ref. 37) China	Positive psychology Brief	PsyCap Efficacy Hope Resilience Optimism Job performance	0.49 * 0.06 0.29 * 0.56 ** 0.72 ** 0.18
Kaplan et al (2014, ref. 47) USA	Positive psychology Long	Positive affect Negative affect	0.03 0.15
Page & Vella-Brodrick (2012, ref. 48) Australia	Positive psychology Long	Positive and negative affect Affective well-being	0.34 * 1.42 ***
Mackenzie et al (2006, ref. 30) Canada	Meditation Brief	Burnout - emotional exhaustion Burnout - depersonalization Relaxation Life satisfaction	0.33 * -0.04 0.24 * 0.13
Bond & Bunce (2000, ref. 40)	Meditation Long	Job satisfaction	0.24 *
Elder et al (2014, ref. 41)	Meditation Long	Stress Depressive symptoms Burnout	0.94 *** 0.67 ** 0.40 *
Jennings et al (2013, ref. 42)	Meditation Long	Emotional exhaustion Depersonalization	0.04 0.06
Stafford-Brown & Paenham (2012, ref. 43)	Meditation Long	Life satisfaction	0.44 *
Ranta & Sud (2008, ref. 32) India	Multidimensional Brief	Stress Burnout (emotional exhaustion) Depersonalization	0.63 ** 0.89 *** 0.51 *
Yung et al (2004, ref. 33) Hong Kong	Relaxation brief	Anxiety symptoms GHQ (anxiety symptoms)	-0.53 ** -0.36 *

Classification of effect sizes: trivial (Cohen's $d \leq .2$); * small (Cohen's $d > .2$); ** moderate (Cohen's $d > .5$); *** large (Cohen's $d > .8$); **** very large (Cohen's $d > 1.3$)