

Appendix A. Literature Search Strategies and Yields

Published Literature

Table A1. PubMed Search, 3/26/15. Limited to date range of 1/1/1990 – present.

Search Query	Items found
#1 Search "total worker health"	22
#2 Search "Occupational Health"[Mesh] OR "Occupational Health Services"[Mesh] OR "Occupational Injuries"[Mesh] OR "Workplace"[Mesh] OR "worksite health"	45888
#3 Search ("Health Promotion"[Mesh]) OR "Accident Prevention"[Mesh]) OR "Wounds and Injuries/prevention and control"[Mesh]	160904
#4 Search (#2 AND #3)	7667
#5 Search (#1 OR #4)	7676
#6 Search (#1 OR #4) Filters: Humans	7116
#7 Search (#1 OR #4) Filters: Humans; English	6473
#8 Search (#1 OR #4) Filters: Publication date from 1990/01/01; Humans; English	6074
#9 Search ("Clinical Trial" [Publication Type] OR "Controlled Clinical Trial" [Publication Type] OR "Randomized Controlled Trial" [Publication Type]) OR "Evaluation Studies" [Publication Type] OR ("Cohort Studies"[Mesh]) OR "Longitudinal Studies"[Mesh]	2127524
#10 Search (#8 AND #9)	830
#11 Search (Occupational Diseases/prevention & control OR Accidents, Occupational/prevention & control)	22822
#12 Search "Workplace"[Mesh] OR Work[Mesh] OR worksite OR workplace OR protection OR "integrated intervention"	309706
#13 Search ((occupational health [mesh] OR occupational exposure [mesh]))	73332
#14 Search (#11 AND #12 AND #13)	1562
#15 Search study OR intervention OR program	7088040
#16 Search (#14 AND #15)	702
#17 Search (#14 AND #15) Filters: English	573
#18 Search (#14 AND #15) Filters: Humans; English	571
#19 Search (#14 AND #15) Filters: Publication date from 1990/01/01; Humans; English	563
#20 Search (#10 OR #19)	1359

Table A2. Cochrane Library Search for Reviews, 3/26/15. No limits based on publication date.

ID	Search	Hits
#1	"Total Worker Health"	16
#2	(occupational OR work) AND (health promotion OR prevention) AND (integrated OR "health education")	8

Table A3. Cochrane Library Search for Clinical Trials, 3/26/15. No limits based on publication date.

ID	Search	Hits
#1	"Total Worker Health"	21
#2	(occupational OR work) AND (health promotion OR prevention) AND (integrated OR "health education")	20

Table A4. PsycINFO Search, 3/26/15. No limits based on publication date.

ID	Search	Hits
#1	"Total Worker Health"	3
#2	(occupational OR work) AND (health promotion OR prevention) AND (integrated OR "health education")	23

Gray Literature

Table A5. Academic Search Premier, 3/26/15. No limits based on publication date.

ID	Search	Hits
#1	"Total Worker Health"	12

Table A6. ClinicalTrials.gov, 3/26/15. No limits based on publication date.

ID	Search	Hits
#1	"Total Worker Health"	12
#2	(occupational OR worksite) AND (health promotion OR prevention) AND (integrated)	8

Appendix B. Excluded Studies

- X1: Not original research
- X2: Ineligible population
- X3: Ineligible or no intervention
- X4: Ineligible study design
- X5: Ineligible setting

1. Community Preventive Services Task Force. Recommendations for worksite-based interventions to improve workers' health. *Am J Prev Med.* 2010 Feb;38(2S):S232-6. Exclusion Code: X1
2. Hymel PA, Loeppke RR, Baase CM, et al. Workplace health protection and promotion: a new pathway for a healthier--and safer--workforce. *J Occup Environ Med.* 2011 Jun;53(6):695-702. PMID: 21654443. Exclusion Code: X1
3. Alkhajah TA, Reeves MM, Eakin EG, et al. Sit-stand workstations: a pilot intervention to reduce office sitting time. *Am J Prev Med.* 2012;43:298-303. Exclusion Code: X3 (gray zone)
4. Pronk NP. Integrated worker health protection and promotion programs: overview and perspectives on health and economic outcomes. *J Occup Environ Med.* 2013 Dec;55(12 Suppl):S30-7. PMID: 24284747. Exclusion Code: X1
5. Sorensen G, McLellan D, Dennerlein JT, et al. Integration of health protection and health promotion: rationale, indicators, and metrics. *J Occup Environ Med.* 2013 Dec;55(12 Suppl):S12-8. PMID: 24284762. Exclusion Code: X1
6. Guise JM, Chang C, Viswanathan M, et al. Systematic Reviews of Complex Multicomponent Health Care Interventions. Research White Paper. AHRQ Publication No. 14-EHC003-EF. Rockville, MD: Agency for Healthcare Research and Quality; March 2014. www.effectivehealthcare.ahrq.gov/reports/final.cfm Exclusion Code: X1
7. Viswanathan M, Kraschnewski J, Nishikawa B, et al. Outcomes of Community Health Worker Interventions. (Prepared by RTI International--University of North Carolina Evidence-based Practice Center under Contract No. 290-2007-10056-I). Rockville, MD: Agency for Healthcare Research and Quality; Jun 2009. Exclusion Code: X1
8. Jonas DE, Cusack K, Forneris CA, et al. Psychological and Pharmacological Treatments for Adults With Posttraumatic Stress Disorder (PTSD). (Prepared by the RTI International-University of North Carolina Evidence-based Practice Center under Contract No. 290-2007-10056-I.). AHRQ Publication No. 13-EHC011-EF. Rockville, MD: Agency for Healthcare Research and Quality; April 2013. Exclusion Code: X1
9. Tsutsumi A, Nagami M, Yoshikawa T, et al. Participatory intervention for workplace improvements on mental health and job performance among blue-collar workers: a cluster randomized controlled trial. *J Occup Environ Med.* 2009 May;51(5):554-63. PMID: 19365287. Exclusion Code: X3
10. Chau JY, Daley M, Dunn S, et al. The effectiveness of sit-stand workstations for changing office workers' sitting time: results from the Stand@Work randomized controlled trial pilot. *Int J Behav Nutr Phys Act.* 2014;11:127. PMID: 25291960. Exclusion Code: X3
11. Helitzer DL, Hathorn G, Benally J, et al. Culturally relevant model program to prevent and reduce agricultural injuries. *J Agric Saf Health.* 2014 Jul;20(3):175-98. PMID: 25174150. Exclusion Code: X3

12. Deitz D, Cook RF, Hersch RK, et al. Heart healthy online: an innovative approach to risk reduction in the workplace. *J Occup Environ Med.* 2014 May;56(5):547-53. PMID: 24806568. Exclusion Code: X3
13. Swartz AM, Rote AE, Welch WA, et al. Prompts to disrupt sitting time and increase physical activity at work, 2011-2012. *Prev Chronic Dis.* 2014;11:E73. PMID: 24784909. Exclusion Code: X3
14. Frederic M, Ozguler A, Baer M, et al. Is the workplace a safer place to have a stroke? *J Occup Environ Med.* 2014 Feb;56(2):127-8. PMID: 24504248. Exclusion Code: X3
15. van Berkel J, Boot CR, Proper KI, et al. Effectiveness of a worksite mindfulness-related multi-component health promotion intervention on work engagement and mental health: results of a randomized controlled trial. *PLoS One.* 2014;9(1):e84118. PMID: 24489648. Exclusion Code: X3 (gray zone)
16. van Berkel J, Boot CR, Proper KI, et al. Effectiveness of a worksite mindfulness-based multi-component intervention on lifestyle behaviors. *Int J Behav Nutr Phys Act.* 2014;11:9. PMID: 24467802. Exclusion Code: X3 (gray zone)
17. Yoshikawa T, Ogami A, Muto T. Evaluation of participatory training in managing mental health for supervisory employees in the financial industry. *J Hum Ergol (Tokyo).* 2013 Dec;42(1-2):45-54. PMID: 25647945. Exclusion Code: X4
18. Coffeng JK, Hendriksen IJ, van Mechelen W, et al. Process evaluation of a worksite social and physical environmental intervention. *J Occup Environ Med.* 2013 Dec;55(12):1409-20. PMID: 24270291. Exclusion Code: X4
19. Dunstan DW, Wiesner G, Eakin EG, et al. Reducing office workers' sitting time: rationale and study design for the Stand Up Victoria cluster randomized trial. *BMC Public Health.* 2013;13:1057. PMID: 24209423. Exclusion Code: X4
20. Jeon YH, Simpson JM, Chenoweth L, et al. The effectiveness of an aged care specific leadership and management program on workforce, work environment, and care quality outcomes: design of a cluster randomised controlled trial. *Implement Sci.* 2013;8:126. PMID: 24160714. Exclusion Code: X3
21. Poston WS, Haddock CK, Jahnke SA, et al. An examination of the benefits of health promotion programs for the national fire service. *BMC Public Health.* 2013;13:805. PMID: 24007391. Exclusion Code: X3
22. Smith K. Evaluation of a stretching program to increase worker flexibility. *Workplace Health Saf.* 2013 Aug;61(8):329-32. PMID: 23930658. Exclusion Code: X3
23. Clark MM, Soyering JE, Jenkins SM, et al. The integration of studio cycling into a worksite stress management programme. *Stress Health.* 2014 Apr;30(2):166-76. PMID: 23897838. Exclusion Code: X3
24. Figl-Hertlein A, Horsak B, Dean E, et al. A physiotherapy-directed occupational health programme for Austrian school teachers: a cluster randomised pilot study. *Physiotherapy.* 2014 Mar;100(1):20-6. PMID: 23835185. Exclusion Code: X3
25. Cooley D, Pedersen S. A pilot study of increasing nonpurposeful movement breaks at work as a means of reducing prolonged sitting. *J Environ Public Health.* 2013;2013:128376. PMID: 23690798. Exclusion Code: X3
26. Sun J, Buys N, Wang X. Effectiveness of a workplace-based intervention program to promote mental health among employees in privately owned enterprises in China. *Popul Health Manag.* 2013 Dec;16(6):406-14. PMID: 23672231. Exclusion Code: X5
27. O'Donnell MP. Will classic workplace health promotion program strategies work for Medicare? *Am J Health Promot.* 2013 May-Jun;27(5):iv-v. PMID: 23631478. Exclusion Code: X3
28. van Dongen JM, Strijk JE, Proper KI, et al. A cost-effectiveness and return-on-investment analysis of a worksite vitality intervention among older hospital workers: results of a randomized controlled trial. *J Occup Environ Med.* 2013 Mar;55(3):337-46. PMID: 23439274. Exclusion Code: X3

29. Sundstrup E, Jakobsen MD, Andersen CH, et al. Participatory ergonomic intervention versus strength training on chronic pain and work disability in slaughterhouse workers: study protocol for a single-blind, randomized controlled trial. *BMC Musculoskelet Disord*. 2013;14:67. PMID: 23433448. Exclusion Code: X3
30. Kuehl KS, Elliot DL, Goldberg L, et al. Economic benefit of the PHLAME wellness programme on firefighter injury. *Occup Med (Lond)*. 2013 Apr;63(3):203-9. PMID: 23416849. Exclusion Code: X4
31. Freak-Poli R, Wolfe R, Brand M, et al. Eight-month postprogram completion: change in risk factors for chronic disease amongst participants in a 4-month pedometer-based workplace health program. *Obesity (Silver Spring)*. 2013 Sep;21(9):E360-8. PMID: 23408732. Exclusion Code: X3
32. Merrill RM, Hull JD. Factors associated with participation in and benefits of a worksite wellness program. *Popul Health Manag*. 2013 Aug;16(4):221-6. PMID: 23405876. Exclusion Code: X4
33. Kines P, Andersen D, Andersen LP, et al. Improving safety in small enterprises through an integrated safety management intervention. *J Safety Res*. 2013 Feb;44:87-95. PMID: 23398709. Exclusion Code: X3
34. Blasche G, Pfeffer M, Thaler H, et al. Worksite health promotion of frequent computer users: comparing selected interventions. *Work*. 2013 Jan 1;46(3):233-41. PMID: 23324690. Exclusion Code: X3
35. Edmunds S, Stephenson D, Clow A. The effects of a physical activity intervention on employees in small and medium enterprises: a mixed methods study. *Work*. 2013 Jan 1;46(1):39-49. PMID: 23241703. Exclusion Code: X3
36. Karlqvist L, Gard G. Health-promoting educational interventions: a one-year follow-up study. *Scand J Public Health*. 2013 Feb;41(1):32-42. PMID: 23221375. Exclusion Code: X3
37. Unterbrink T, Pfeifer R, Krippeit L, et al. A manual-based group program to improve mental health: what kind of teachers are interested and who stands to benefit from this program? *Int Arch Occup Environ Health*. 2014 Jan;87(1):21-8. PMID: 23212894. Exclusion Code: X3
38. van Holland BJ, de Boer MR, Brouwer S, et al. Sustained employability of workers in a production environment: design of a stepped wedge trial to evaluate effectiveness and cost-benefit of the POSE program. *BMC Public Health*. 2012;12:1003. PMID: 23164366. Exclusion Code: X4
39. Flannery K, Resnick B, McMullen TL. The impact of the Worksite Heart Health Improvement Project on work ability: a pilot study. *J Occup Environ Med*. 2012 Nov;54(11):1406-12. PMID: 23135301. Exclusion Code: X3
40. Gingerich SB, Anderson DR, Koland H. Impact of financial incentives on behavior change program participation and risk reduction in worksite health promotion. *Am J Health Promot*. 2012 Nov-Dec;27(2):119-22. PMID: 23113782. Exclusion Code: X3
41. Hogg-Johnson S, Robson L, Cole DC, et al. A randomised controlled study to evaluate the effectiveness of targeted occupational health and safety consultation or inspection in Ontario manufacturing workplaces. *Occup Environ Med*. 2012 Dec;69(12):890-900. PMID: 22918898. Exclusion Code: X3
42. Coffeng JK, Hendriksen IJ, Duijts SF, et al. The development of the Be Active & Relax "Vitality in Practice" (VIP) project and design of an RCT to reduce the need for recovery in office employees. *BMC Public Health*. 2012;12:592. PMID: 22852835. Exclusion Code: X4
43. LeCheminant JD, Merrill RM. Improved health behaviors persist over two years for employees in a worksite wellness program. *Popul Health Manag*. 2012 Oct;15(5):261-6. PMID: 22823340. Exclusion Code: X3
44. Buller DB, Andersen PA, Walkosz BJ, et al. Enhancing industry-based dissemination of an occupational sun protection program with theory-based strategies employing personal contact. *Am J Health Promot*. 2012 Jul-Aug;26(6):356-65. PMID: 22747318. Exclusion Code: X3

45. Harvey L, Fowles JB, Xi M, et al. When activation changes, what else changes? the relationship between change in patient activation measure (PAM) and employees' health status and health behaviors. *Patient Educ Couns*. 2012 Aug;88(2):338-43. PMID: 22459636. Exclusion Code: X3
46. Strijk JE, Proper KI, van der Beek AJ, et al. A worksite vitality intervention to improve older workers' lifestyle and vitality-related outcomes: results of a randomised controlled trial. *J Epidemiol Community Health*. 2012 Nov;66(11):1071-8. PMID: 22268128. Exclusion Code: X3
47. DeJoy DM, Wilson MG, Padilla HM, et al. Process evaluation results from an environmentally focused worksite weight management study. *Health Educ Behav*. 2012 Aug;39(4):405-18. PMID: 22002249. Exclusion Code: X3
48. Linde JA, Nygaard KE, MacLehose RF, et al. HealthWorks: results of a multi-component group-randomized worksite environmental intervention trial for weight gain prevention. *Int J Behav Nutr Phys Act*. 2012;9:14. PMID: 22340088. Exclusion Code: X3
49. Ribeiro SB, Wagnacker DS, de Oliveira LB. Evaluation of the exercise intervention with the "Back School" education program in a Brazilian company of cigars: a case study. *Work*. 2012;41 Suppl 1:2412-6. PMID: 22317078. Exclusion Code: X3
50. Morgan PJ, Collins CE, Plotnikoff RC, et al. The impact of a workplace-based weight loss program on work-related outcomes in overweight male shift workers. *J Occup Environ Med*. 2012 Feb;54(2):122-7. PMID: 22269987. Exclusion Code: X3
51. Pipe TB, Buchda VL, Launder S, et al. Building personal and professional resources of resilience and agility in the healthcare workplace. *Stress Health*. 2012 Feb;28(1):11-22. PMID: 22259154. Exclusion Code: X3
52. Silberman J, Schwartz S, Giuseffi DL, et al. Reductions in employee productivity impairment observed after implementation of web-based worksite health promotion programs. *J Occup Environ Med*. 2011 Dec;53(12):1404-12. PMID: 22173284. Exclusion Code: X4
53. Moen P, Kelly EL, Tranby E, et al. Changing work, changing health: can real work-time flexibility promote health behaviors and well-being? *J Health Soc Behav*. 2011 Dec;52(4):404-29. PMID: 22144731. Exclusion Code: X3
54. Oude Hengel KM, Blatter BM, van der Molen HF, et al. Meeting the challenges of implementing an intervention to promote work ability and health-related quality of life at construction worksites: a process evaluation. *J Occup Environ Med*. 2011 Dec;53(12):1483-91. PMID: 22104978. Exclusion Code: X3
55. Devine CM, Maley M, Farrell TJ, et al. Process evaluation of an environmental walking and healthy eating pilot in small rural worksites. *Eval Program Plann*. 2012 Feb;35(1):88-96. PMID: 22054528. Exclusion Code: X3
56. Jackson J, Kohn-Parrott KA, Parker C, et al. Blood Pressure Success Zone: You Auto Know. A worksite-based program to improve blood pressure control among auto workers. *Popul Health Manag*. 2011 Oct;14(5):257-63. PMID: 21988347. Exclusion Code: X3
57. Vuori J, Toppinen-Tanner S, Mutanen P. Effects of resource-building group intervention on career management and mental health in work organizations: randomized controlled field trial. *J Appl Psychol*. 2012 Mar;97(2):273-86. PMID: 21942405. Exclusion Code: X3
58. Christensen JR, Faber A, Ekner D, et al. Diet, physical exercise and cognitive behavioral training as a combined workplace based intervention to reduce body weight and increase physical capacity in health care workers - a randomized controlled trial. *BMC Public Health*. 2011;11:671. PMID: 21871113. Exclusion Code: X3
59. Rasmussen CD, Jorgensen MB, Carneiro IG, et al. Participation of Danish and immigrant cleaners in a 1-year worksite intervention preventing physical deterioration. *Ergonomics*. 2012;55(2):256-64. PMID: 21846286. Exclusion Code: X4

60. von Thiele Schwarz U, Hasson H. Employee self-rated productivity and objective organizational production levels: effects of worksite health interventions involving reduced work hours and physical exercise. *J Occup Environ Med.* 2011 Aug;53(8):838-44. PMID: 21785369. Exclusion Code: X3
61. Backman D, Gonzaga G, Sugerman S, et al. Effect of fresh fruit availability at worksites on the fruit and vegetable consumption of low-wage employees. *J Nutr Educ Behav.* 2011 Jul-Aug;43(4 Suppl 2):S113-21. PMID: 21683280. Exclusion Code: X3
62. Merrill RM, Aldana SG, Garrett J, et al. Effectiveness of a workplace wellness program for maintaining health and promoting healthy behaviors. *J Occup Environ Med.* 2011 Jul;53(7):782-7. PMID: 21670705. Exclusion Code: X3
63. Mauceri E, Bienkowski C, Hanson KA, et al. A health outcome assessment of the Cardio Metabolic Mission Health Program at Novartis. *J Occup Environ Med.* 2011 Jun;53(6):647-52. PMID: 21654435. Exclusion Code: X3
64. Hnizdo E, Berry A, Hakobyan A, et al. Worksite wellness program for respiratory disease prevention in heavy-construction workers. *J Occup Environ Med.* 2011 Mar;53(3):274-81. PMID: 21386692. Exclusion Code: X4
65. Hirai T, Kusaka Y, Suganuma N, et al. Work form affects maximum oxygen uptake for one year in workers. *Ind Health.* 2011;49(3):321-7. PMID: 21273736. Exclusion Code: X3
66. Carlson E, Murphy M. Impacting health through on-the-job counseling: role for professional nurses. *Medsurg Nurs.* 2010 Sep-Oct;19(5):295-9. PMID: 21189743. Exclusion Code: X3
67. Hwang GS, Jung HS, Yi Y, et al. Smoking cessation intervention using stepwise exercise incentives for male workers in the workplace. *Asia Pac J Public Health.* 2012 Jan;24(1):82-90. PMID: 21159694. Exclusion Code: X3
68. Granacher U, Wick C, Rueck N, et al. Promoting balance and strength in the middle-aged workforce. *Int J Sports Med.* 2011 Jan;32(1):35-44. PMID: 21072736. Exclusion Code: X3
69. Spekle EM, Heinrich J, Hoozemans MJ, et al. The cost-effectiveness of the RSI QuickScan intervention programme for computer workers: Results of an economic evaluation alongside a randomised controlled trial. *BMC Musculoskelet Disord.* 2010;11:259. PMID: 21070621. Exclusion Code: X3
70. Flaxman PE, Bond FW. Worksite stress management training: moderated effects and clinical significance. *J Occup Health Psychol.* 2010 Oct;15(4):347-58. PMID: 21058850. Exclusion Code: X3
71. Ariyoshi H, Suzaki Y, Takayama N, et al. A health promotion program at a Japanese newspaper undergoing restructuring. *AAOHN J.* 2010 Sep;58(9):383-7. PMID: 20795580. Exclusion Code: X3
72. Sorensen G, Stoddard A, Quintiliani L, et al. Tobacco use cessation and weight management among motor freight workers: results of the gear up for health study. *Cancer Causes Control.* 2010 Dec;21(12):2113-22. PMID: 20725775. Exclusion Code: X3
73. Linden TC, Jackson C, Rutledge S, et al. The Heart of Grinnell: A Community-Wide Rural Health Wellness Initiative: a pilot observational study and a prospective study design. *Altern Ther Health Med.* 2010 Jul-Aug;16(4):46-9. PMID: 20653295. Exclusion Code: X2
74. Ikegami K, Tahara H, Yamada T, et al. Effects of a mental health training program for manufacturing company managers. *J UOEH.* 2010 Jun 1;32(2):141-53. PMID: 20549903. Exclusion Code: X3
75. Jorgensen MB, Rasmussen CD, Ekner D, et al. Successful reach and adoption of a workplace health promotion RCT targeting a group of high-risk workers. *BMC Med Res Methodol.* 2010;10:56. PMID: 20546592. Exclusion Code: X3
76. Long DA, Sheehan P. A case study of population health improvement at a Midwest regional hospital employer. *Popul Health Manag.* 2010 Jun;13(3):163-73. PMID: 20521905. Exclusion Code: X3

77. Scott LD, Hofmeister N, Rogness N, et al. Implementing a fatigue countermeasures program for nurses: a focus group analysis. *J Nurs Adm.* 2010 May;40(5):233-40. PMID: 20431458. Exclusion Code: X3
78. van der Molen HF, Frings-Dresen MH, Sluiter JK. The longitudinal relationship between the use of ergonomic measures and the incidence of low back complaints. *Am J Ind Med.* 2010 Jun;53(6):635-40. PMID: 20340111. Exclusion Code: X3
79. Gates DM, Brehm BJ. Challenges of a worksite health promotion project. *AAOHN J.* 2010 Mar;58(3):117-22. PMID: 20210262. Exclusion Code: X3
80. Ott MG, Yong M, Zober A, et al. Impact of an occupational health promotion program on subsequent illness and mortality experience. *Int Arch Occup Environ Health.* 2010 Dec;83(8):887-94. PMID: 20186547. Exclusion Code: X3 (gray zone)
81. Hasson H, Brown C, Hasson D. Factors associated with high use of a workplace web-based stress management program in a randomized controlled intervention study. *Health Educ Res.* 2010 Aug;25(4):596-607. PMID: 20150531. Exclusion Code: X3
82. Parker KB, DeJoy DM, Wilson MG, et al. Application of the Environmental Assessment Tool (EAT) as a process measure for a worksite weight management intervention. *J Occup Environ Med.* 2010 Jan;52 Suppl 1:S42-51. PMID: 20061887. Exclusion Code: X3
83. Beresford SA, Bishop SK, Brunner NL, et al. Environmental assessment at worksites after a multilevel intervention to promote activity and changes in eating: the PACE project. *J Occup Environ Med.* 2010 Jan;52 Suppl 1:S22-8. PMID: 20061883. Exclusion Code: X3
84. Vingard E, Blomkvist V, Rosenblad A, et al. A physical fitness programme during paid working hours - impact on health and work ability among women working in the social service sector: a three year follow up study. *Work.* 2009;34(3):339-44. Exclusion Code: X3
85. Verweij LM, Proper KI, Weel AN, et al. Design of the Balance@Work project: systematic development, evaluation and implementation of an occupational health guideline aimed at the prevention of weight gain among employees. *BMC Public Health.* 2009;9:461. PMID: 20003405. Exclusion Code: X3
86. Kwak L, Kremers SP, Visscher TL, et al. Behavioral and cognitive effects of a worksite-based weight gain prevention program: the NHF-NRG in balance-project. *J Occup Environ Med.* 2009 Dec;51(12):1437-46. PMID: 19952793. Exclusion Code: X3
87. van der Molen HF, Hoonakker PL, Lehtola MM, et al. Writing a Cochrane systematic review on preventive interventions to improve safety: the case of the construction industry. *Med Lav.* 2009 Jul-Aug;100(4):258-67. PMID: 19764181. Exclusion Code: X3
88. Pillastrini P, Mugnai R, Bertozzi L, et al. Effectiveness of an at-work exercise program in the prevention and management of neck and low back complaints in nursery school teachers. *Ind Health.* 2009 Aug;47(4):349-54. PMID: 19672007. Exclusion Code: X3
89. Martin A, Sanderson K, Scott J, et al. Promoting mental health in small-medium enterprises: an evaluation of the "Business in Mind" program. *BMC Public Health.* 2009;9:239. PMID: 19604351. Exclusion Code: X3
90. Steenstra IA, Knol DL, Bongers PM, et al. What works best for whom? An exploratory, subgroup analysis in a randomized, controlled trial on the effectiveness of a workplace intervention in low back pain patients on return to work. *Spine (Phila Pa 1976).* 2009 May 20;34(12):1243-9. PMID: 19412140. Exclusion Code: X3
91. Goetzel RZ, Roemer EC, Short ME, et al. Health improvement from a worksite health promotion private-public partnership. *J Occup Environ Med.* 2009 Mar;51(3):296-304. PMID: 19225415. Exclusion Code: X3

92. Loeppke R, Nicholson S, Taitel M, et al. The impact of an integrated population health enhancement and disease management program on employee health risk, health conditions, and productivity. *Popul Health Manag.* 2008 Dec;11(6):287-96. PMID: 19108644. Exclusion Code: X3
93. Kobayashi Y, Kaneyoshi A, Yokota A, et al. Effects of a worker participatory program for improving work environments on job stressors and mental health among workers: a controlled trial. *J Occup Health.* 2008;50(6):455-70. PMID: 19023175. Exclusion Code: X3
94. Lu C, Schultz AB, Sill S, et al. Effects of an incentive-based online physical activity intervention on health care costs. *J Occup Environ Med.* 2008 Nov;50(11):1209-15. PMID: 19001947. Exclusion Code: X3
95. Bergstrom G, Bjorklund C, Fried I, et al. A comprehensive workplace intervention and its outcome with regard to lifestyle, health and sick leave: the AHA study. *Work.* 2008;31(2):167-80. PMID: 18957735. Exclusion Code: X3 (gray zone)
96. von Thiele Schwarz U, Lindfors P, Lundberg U. Health-related effects of worksite interventions involving physical exercise and reduced workhours. *Scand J Work Environ Health.* 2008 Jun;34(3):179-88. PMID: 18728907. Exclusion Code: X3
97. Larsson A, Karlqvist L, Gard G. Effects of work ability and health promoting interventions for women with musculoskeletal symptoms: a 9-month prospective study. *BMC Musculoskelet Disord.* 2008;9:105. PMID: 18644154. Exclusion Code: X3
98. Bourgeois FT, Simons WW, Olson K, et al. Evaluation of influenza prevention in the workplace using a personally controlled health record: randomized controlled trial. *J Med Internet Res.* 2008;10(1):e5. PMID: 18343794. Exclusion Code: X3 (gray zone)
99. Chen J, Wu X, Gu D. Hypertension and cardiovascular diseases intervention in the capital steel and iron company and Beijing Fangshan community. *Obes Rev.* 2008 Mar;9 Suppl 1:142-5. PMID: 18307717. Exclusion Code: X3
100. Naydeck BL, Pearson JA, Ozminkowski RJ, et al. The impact of the highmark employee wellness programs on 4-year healthcare costs. *J Occup Environ Med.* 2008 Feb;50(2):146-56. PMID: 18301171. Exclusion Code: X3
101. Prochaska JO, Butterworth S, Redding CA, et al. Initial efficacy of MI, TTM tailoring and HRI's with multiple behaviors for employee health promotion. *Prev Med.* 2008 Mar;46(3):226-31. PMID: 18155287. Exclusion Code: X3
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Appendix C. Risk of Bias Ratings

Table C1. Risk of bias assessments for TWH studies eligible for Key Question 2

Author, Year Trial Name (if applicable)	Study Design	Eligibility criteria clearly described?	<u>RCTs ONLY:</u> Method of randomization method adequate?	<u>RCTs ONLY:</u> Randomization at worksite or individual level?	<u>RCTs ONLY:</u> Allocation concealment adequate?	<u>Obs Studies ONLY:</u> Groups recruited from same source population?	Baseline Chx similar?	Intervention fidelity adequate?
Allen, 2003 ¹ International's Allergy Project	NRCT	Yes	NA	NA	NA	Yes	Yes	NR/CND
Boggild, 2001 ²	Prospective cohort study	No	NA	NA	NA	No	No	NR/CND
Eriksen, 2002 ³	RCT	Yes	Yes	Worksite	Yes	NA	No	NR/CND
Maes, 1998 ⁴ The Brabantia Project	NRCT	No	NA	NA	NA	No	No	No
Okechukwu, 2009 ⁵ MassBuilt	RCT	Yes	NR/CND	Worksite	NR/CND	NA	No	NR/CND
Palumbo, 2012 ⁶	RCT	Yes	NR/CND	Individual	NR/CND	NA	NR/CND	Yes
Sorensen, 1998 ⁷⁻⁹ WellWorks	RCT	Yes	NR/CND	Worksite	NR/CND	NA	NR/CND	NR/CND
Sorensen, 2003 ¹⁰⁻¹² WellWorks-2	RCT	Yes	Yes	Worksite	Yes	NA	No	NR/CND
Sorensen, 2005 ¹³⁻¹⁵ Healthy Directions- Small Business	RCT	Yes	NR/CND	Worksite	NR/CND	NA	No	NR/CND
Sorensen, 2007 ¹⁶ Tools for Health	RCT	Yes	NR/CND	Individual	NR/CND	NA	Yes	NR/CND
Tveito, 2009 ¹⁷ Integrated Health Programme	RCT	Yes	Yes	Individual	NR/CND	NA	NR/CND	NR/CND
von Thiele Schwarz, 2015 ¹⁸	RCT	Yes	NR/CND	Hospital Ward	NR/CND	NA	No	Yes

Chx, Characteristics; CND, cannot determine; Obs, observational; NA, not applicable; NR, not reported; NRCT, non-randomized controlled trial; RCT, randomized controlled trial; ROB, risk of bias

Table C2. Risk of bias assessments for TWH studies eligible for Key Question 2, part 2

Author, Year	Reported adherence to the intervention?	Overall attrition?	Differential attrition?	Differential ($\geq 15\%$) or overall high attrition (generally $\geq 20\%$) raising concern for bias?	Analysis conducted on an ITT basis?
Allen, 2003 ¹ International's Allergy Project	NR	NR	NR	NR/CND	No
Boggild, 2001 ²	Variable ^a	Workplace: None; Workers: baseline survey response 68%; 24 weeks (101 baseline respondents - 75 completed post-test)/101 = 26%	Unclear ^b	Yes	No
Eriksen, 2002 ³	NR	Workers, 52 weeks: (860 randomized/completed pre-survey - 472 completed follow-up)/860 randomized=45%; Workers, 12 weeks: (860 randomized/completed pre-survey - 628 completed post-test)/860 randomized = 27%	Workers, 52 weeks: 40-52% across groups; Workers, 12 weeks: 20-33% across groups	Yes	Yes
Maes, 1998 ⁴ The Brabantia Project	Variable ^c	Workers: baseline survey response (52%); Workers, 0% 156 weeks: (346 baseline respondents - 264 follow-up survey respondents)/346 = 24%		Yes	No
Okechukwu, 2009 ⁵ MassBuilt	NR	Workers: baseline survey response 94%; at 6 months: (1817 initial responders - 1213 completers)/1817=33%	NR/CND	Yes	Yes
Palumbo, 2012 ⁶	Average attendance of 13 classes= 82%	Workers: 21%	14%	Yes	Yes
Sorensen, 1998 ⁷⁻⁹ WellWorks	See comments	Worksites: NR; Workers, mean baseline survey response across sites 61% (range 36-99%); Workers, post-intervention: (5914 baseline respondents – 2658 follow-up survey respondents)/5914 = 60%	NR	Yes	No
Sorensen, 2003 ¹⁰⁻¹² WellWorks-2	NR	Worksite: 2/17 (11.8%); Workplace processes (for safety outcomes): 24/131 (18.3%); Workers, baseline survey response rate: 57%; baseline respondents to final survey: (9019-5156)/9019 = 43%	Worksite: unclear; Workplace processes: unclear, differential N provided for only 16 of 24 missing workplace processes; Workers: unclear ^d	Yes	No
Sorensen, 2005 ¹³⁻¹⁵ Healthy Directions-Small Business	Variable ^e	Worksites: 8%; Workers: baseline respondents to final survey: (1740 baseline respondents - 974 who completed baseline and follow-up survey)/1740 = 44%	Worksites: 0%; Workers: NR	Yes	Yes

Table C2. Risk of bias assessments for TWH studies eligible for Key Question 2, part 2 (continued)

Author, Year	Reported adherence to the intervention?	Overall attrition?	Differential attrition?	Differential ($\geq 15\%$) or overall high attrition (generally $\geq 20\%$) raising concern for bias?	Analysis conducted on an ITT basis?
Sorensen, 2007 ¹⁶ Tools for Health	NR	14%	3%	No	Yes
Tveito, 2009 ¹⁷ Integrated Health Programme	NR	28%	18%	Yes	Yes
von Thiele Schwarz, 2015 ¹⁸	NR	Workers: (312 workers with baseline survey - 202 workers completed all surveys)/312 workers = 35% Workers, baseline survey response rate: 87.5%	NR/CND	Yes	NA

^a The authors state that some wards did not consistently adhere to schedule due to "staff shortage, sickness and maternity leave, new rules for handling overtime work, and the like."²

^b Authors state initial participation did not differ between wards. "Dropout rate" between baseline and 6 months was significantly higher in "intervention control wards and lower in the day-working control wards."²

^c The authors note that participation for health promotion activities varied: 10-20% participation rate for health education sessions and 60-70% for health fair and exhibition.

^d The authors only provide sufficient data to calculate differential attrition for the cross-sectional sample of workers who completed a baseline and following-up survey (7%); for the embedded sample who completed a baseline survey, the non-response rate to the follow-up survey by group (intervention versus control) is NR.

^e Varied by intervention component and worksite: 74% of final survey respondents reported participating in ≥ 1 of 17 health promotion and/or safety programs at intervention sites vs. 29% at control sites. Mean worksite participation was 47% per event per site (range: 17-56%)¹⁴

CND, cannot determine; ITT, intent-to-treat; N, number; NA, not applicable; NR, not reported

Table C3. Risk of bias assessments for TWH studies eligible for Key Question 2, part 3

Author, Year	Cross-overs or contamination raising concern for bias?	Eligible outcome measures valid and reliable?	Outcome assessors masked?	Duration of follow-up adequate to assess outcome?	Appropriate method used to handle missing data?	Analysis adjusted for potential confounders?	ROB	Comments on Risk of Bias Rating
Allen, 2003 ¹ International's Allergy Project	No	Yes	NR/CND	No	No	No	High	Experimental and control sites differed at baseline (age, job type, union concentration and allergy medicine regimens). Participation varied substantially by worksite and intervention component. Outcome measures were poorly described and evaluated after only one education cycle; authors note several cycles may be required to produce desired changes. Multiple elements of study design were NR. Attrition was NR; analyses focus on completers (pre-post surveys).
Boggild, 2001 ²	No	Yes	No	Yes	No	NR/CND	High	High overall attrition and differential attrition contributed to high risk of selection bias. Groups differed at baseline (satisfaction with works schedule, exercise frequency and smoking status); there was no adjustment for differences or other confounding variables in the analysis. Some wards chose to implement a partial rather than full set of intervention components. Authors compared three groups based on participation (full, partial, none); reasons for choosing or not choosing the full intervention may relate to work conditions or baseline differences across wards.
Eriksen, 2002 ³	No	Yes	NR/CND	Yes	Partially	No	High	High overall and differential attrition contributed to selection bias. Groups differed at baseline (number of working hours per week and years in current occupation). Authors conducted a modified ITT analysis and handled missing data using a LOCF approach for some outcomes

Table C3. Risk of bias assessments for TWH studies eligible for Key Question 2, part 3 (continued)

Author, Year	Cross-overs or contamination raising concern for bias?	Eligible outcome measures valid and reliable?	Outcome assessors masked?	Duration of follow-up adequate to assess outcome?	Appropriate method used to handle missing data?	Analysis adjusted for potential confounders?	ROB	Comments on Risk of Bias Rating
Maes, 1998 ⁴ The Brabantia Project	NR/CND	No	No	Yes	No	Yes	High	At baseline: intervention group had more women (26% vs. 12%) and less education (61% vs. 49% with only an elementary education) than control group. Groups also differed in variables associated with working conditions. Only gender and educational level were entered as covariates in analyses. Adherence to some intervention components was very low. Important outcomes were mostly reported as composite scales or scores. Overall attrition was high (24%).
Okechukwu, 2009 ⁵ MassBuilt	NR/CND	Yes	NR/CND	Yes	No	Yes	High	Groups differed in race, gender, and income at baseline. There is high overall attrition (33%) and no methods used to handle missing data. Differential attrition NR.
Palumbo, 2012 ⁶	NR/CND	Yes	NR/CND	Yes	No	No	High	Baseline characteristics are noted in text but not provided in a table. Study is small (N=14) with overall high attrition (21%) and differential attrition (14%), and no methods were used to address missing data. Numerous risk of bias elements NR.
Sorensen, 1998 ⁷⁻⁹ WellWorks	NR/CND	Yes	No	Yes	No	Yes	High	High risk of selection bias. There was substantial attrition for the primary outcome measure; differential attrition is unclear. Participation varied across intervention activities and by job status; overall participation in ≥1 activity during two year intervention was 34-40%. Self-reported quit rate measure has risk of recall bias. Numerous risk of bias elements NR.

Table C3. Risk of bias assessments for TWH studies eligible for Key Question 2, part 3 (continued)

Author, Year	Cross-overs or contamination raising concern for bias?	Eligible outcome measures valid and reliable?	Outcome assessors masked?	Duration of follow-up adequate to assess outcome?	Appropriate method used to handle missing data?	Analysis adjusted for potential confounders?	ROB	Comments on Risk of Bias Rating
Sorensen, 2003 ¹⁰⁻¹² WellWorks-2	NR/CND	Yes	No	Yes	No	NR/CND	High	Groups differed at baseline in terms of age, education and job type. There is high attrition (54%) not accounted for in the analysis; differential attrition is not clearly reported. Self-reported quit rate measure has risk of recall bias. Safety measures not validated. Authors report adjusting for baseline differences between arms, but covariates are unclear. Numerous risk of bias elements NR.
Sorensen, 2005 ¹³⁻¹⁵ Healthy Directions- Small Business	No	Yes	NR/CND	Yes	No	Yes	Medium	Groups differed at baseline; intervention sites had more women than control sites. "Minimal intervention" control group not well described. Fidelity to intervention is unclear; participation varied by worksite. Attrition is high; authors report conducting ITT analysis using LOCF for missing data for two worksites that dropped out (results not reported separately, do not address missing data for non-responders from other worksites). Analyses adjusted for potential confounding by worksites, occupation, and race/ethnicity.
Sorensen, 2007 ¹⁶ Tools for Health	NR/CND	Yes	NR/CND	Yes	Yes	NA	Medium	Groups differed slightly at baseline; intervention group had more participants with post-high school training and higher salary compared with control group. Multiple study design elements (e.g., fidelity, randomization methods, allocation concealment) not well described. Eligible outcomes assessed by self-report (smoking, dietary changes) and subject to recall bias.

Table C3. Risk of bias assessments for TWH studies eligible for Key Question 2, part 3 (continued)

Author, Year	Cross-overs or contamination raising concern for bias?	Eligible outcome measures valid and reliable?	Outcome assessors masked?	Duration of follow-up adequate to assess outcome?	Appropriate method used to handle missing data?	Analysis adjusted for potential confounders?	ROB	Comments on Risk of Bias Rating
Tveito, 2009 ¹⁷ Integrated Health Programme	NR/CND	Yes	Yes	Yes	No	NA	High	High attrition (overall and differential) contribute to risk of selection bias. Dropouts were younger and had more sick leave than completers. Baseline groups are not well described (e.g., age, comorbidities, job type). Adherence, intervention fidelity are not reported.
von Thiele Schwarz, 2015 ¹⁸	Yes	NR/CND	NR/CND	Yes	No	No	High	High attrition (>30%), potentially confounding differences between groups not fully addressed or adjusted for in the analysis contributed to bias. Baseline intervention and control groups differed by job type and length of employment onwards. Contamination is also concern; control units had OSH functions integrated into continuous improvement processes during intervention period. Self-rated health outcome does not appear to be externally validated.

CND, cannot determine; ITT, intent-to-treat; LOCF, last observation carried forward; N, number; NA, not applicable; NR, not reported; OSH, occupational safety and health

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Appendix D. Strength of Evidence Tables

Table D1. Strength of evidence: Smoking cessation

Population; Intervention, Comparator; Outcome measure; Time-point	Number of Studies; Subjects Study Design	Study Limitations	Consistency	Directness	Precision	Direction and Magnitude of effect	Strength of Evidence
Construction laborers ¹ and manufacturing workers ² Integrated Intervention versus no intervention; Self-reported 7-day abstinence 22-26 weeks	2; 737 RCTs	Medium or High	Consistent	Indirect	Precise	<p>One RCT rated medium ROB:¹ % of baseline smokers reporting 7-day abstinence (smoking) at 26 weeks: G1: 19% G2: 8% p=0.03</p> <p>% of baseline tobacco users reporting 7-day abstinence (any tobacco use) at 26 weeks: G1: 19% G2: 7% p=0.005</p> <p>One RCT rated high ROB:² % of baseline smokers reporting 7-day abstinence at 22 weeks: G1: 26% G2: 17% p=0.014</p>	Low for benefit

G = Group; RCT = randomized controlled trial; ROB= risk of bias.

Table D2. Strength of evidence: Healthy eating behavior (increased consumption of fruit and vegetables)

Population; Intervention Category; Time-point	Number of Studies; Subjects Study Design	Study Limitations	Consistency	Directness	Precision	Direction and Magnitude of effect	Strength of Evidence
Manufacturing workers ^{3,4} and construction workers ¹	3; 6056 RCTs	Medium or High	Consistent	Indirect	Precise	Two RCTs rated medium ROB: Servings per day, mean change from baseline: G1: +1.52 (SD=3.89) G2: -0.09 (SD=3.31) p= <0.0001	Low for benefit
Integrated Intervention versus no intervention;						% of participants consuming 5 or more servings of fruits and vegetables per day, mean change from baseline: ³	
26-104 weeks						Overall: G1: +5.4% G2: +1.7% p=0.41	
						Managers: G1: -5.5% G2: +3.6% p=0.048	
						Workers: G1: +7.5% G2: +1.1% p=0.048	
						One RCT rated high ROB: ⁴ Servings per day, mean change from baseline: Servings per day, mean change from baseline: G1: 0.22 G2: 0.09 p=0.04	

G = group; RCT = randomized controlled trial; ROB= risk of bias; SD = standard deviation.

Table D3. Strength of evidence: Healthy eating behavior (decreased consumption of red meat)

Population; Intervention Category; Time-point	Number of Studies; Subjects Study Design	Study Limitations	Consistency	Directness	Precision	Direction and Magnitude of effect	Strength of Evidence
Manufacturing workers; ³ Integrated Intervention versus no intervention; 78 weeks	1; 3092 RCT	Medium	Unknown	Indirect	Imprecise	% of participants consuming 3 or fewer servings of red meat per week, mean change from baseline: G1: +4.1% G2: + 3.0% P=0.72	Insufficient

G = group; RCT = randomized controlled trial.

Table D4. Strength of evidence: Increased levels of physical activity

Population; Intervention Category; Time-point	Number of Studies; Subjects Study Design	Study Limitations	Consistency	Directness	Precision	Direction and Magnitude of effect	Strength of Evidence
Manufacturing workers; ³ Integrated Intervention versus no intervention; 78 weeks	1; 3092 RCT	Medium	Unknown	Indirect	Imprecise	Change from baseline in the percentage of participants who exercise \geq 2.5 hours per week: Overall: G1: +5.4 G2: -0.9% p=0.23 Managers: G1: -2.0 G2: +3.7 p= 0.09 Workers: G1: +7.1 G2: -2.1 p= 0.09	Insufficient

G=group; RCT= randomized controlled trial.

References for Appendix D

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