

SUMMARY

Chapter 1 described the current challenges and opportunities in worksite health promotion. Because of the drastic demographic changes in the near future, a shortage on the labour market is expected. Therefore, prolonged labour participation is needed. It is warranted to explore ways to sustain a healthy employability of the workforce. Over the past decades, the nature of work has become less physical, more sedentary, and more mentally demanding. This change may affect mental health and lifestyle behaviours. Because of the increasing importance of mental capabilities for work performance, good mental health of employees has become one of the most important resources for organisations. The increased importance of good mental health for work, combined with a renewed focus on positive organisational psychology, has led to the development of the concept of work engagement. Because of the importance of mental health and lifestyle behaviours for individual employees, as well as for employers and for society, these outcomes are relevant to target in worksite health promotion. The potential reach and social network of the worksite result in high expectations of health promotion in this setting. Nevertheless, the worksite is also a complicated setting for health promotion, with different stakeholders involved and thus different views. Developing, implementing and evaluating worksite health promotion requires dealing with stakeholders and their different views, in an ethically sound way. Therefore, insight into these stakeholders' views on worksite health promotion, and ethical considerations that result from differences between these views, is required.

Addressing work engagement, mental health, and lifestyle in worksite health promotion, this thesis had three main objectives:

- 1) To develop a worksite health promotion intervention
- 2) To evaluate the developed worksite health promotion intervention
- 3) To explore ethical considerations of worksite health promotion.

Chapter 2 concerned the systematic development of the worksite health promotion intervention. The target population consisted of employees of two research institutes. The employees, together with the management, were involved in the development

of the intervention. A needs assessment of the target population resulted in the following intervention objectives: 1) to improve work engagement, 2) to improve vigorous physical activity in leisure time, 3) to reduce sedentary behaviour at work, including sitting during lunchtime, and 4) to improve fruit and vegetable intake. Next, these intervention objectives were linked to theoretical methods (such as self-regulation) and practical strategies (such as mindfulness-based training), to aim at resources (such as self-efficacy) and determinants (such as perceived barriers). In accordance with the preferences of the target population, this was combined into a worksite health promotion intervention. The so-called “Mindful Vitality In Practice (VIP)” intervention comprised an in-company mindfulness-based training, consisting of 8 weekly 1.5-hour sessions plus homework exercises, 8 sessions of e-coaching, and supporting elements such as the provision of fruit, lunch walking routes, and a buddy-system. The total duration of the intervention was 6 months. The Mindful VIP intervention was evaluated in a randomised controlled trial (RCT) design, among 257 employees of two research institutes. Data were collected at baseline (T0), and at 6 and 12 months of follow-up (T1 and T2, respectively) using questionnaires. In addition, physical activity was assessed objectively, using accelerometers in a randomly chosen subgroup (n=100).

In **chapter 3**, we explored whether lifestyle (i.e. physical activity) and mental health and work engagement are associated. Previous studies have found moderate to vigorous physical activity to be associated with a decreased risk of mental disorders. However, studies examining associations between moderate to vigorous physical activity and mental health in general, and indicators of well-being, such as work engagement, are scarce. In order to explore these associations, a total of 257 employees from two research institutes, self-reported their moderate to vigorous physical activity, mental health and work engagement. In addition, a randomly chosen subgroup (n=100) wore an Actigraph accelerometer for a 1-week period to objectively measure their moderate to vigorous physical activity. Crude and adjusted associations between moderate to vigorous physical activity and both work engagement and mental health were studied using linear regression analyses. We did not find any associations of either objectively or subjectively measured physical activity with work engagement

and mental health. Although the beneficial effects of physical activity on mental disorders have been established in previous studies, this study found no evidence for the beneficial effects of physical activity on well-being. The possible difference in how the physical activity-mental health relationship works for negative and positive sides of mental health should be considered in future studies.

The aim of **chapter 4** was to evaluate the process of implementation of the Mindful VIP intervention, and to explore associations between process measures and compliance. Process measures were assessed using a combination of quantitative and qualitative methods. The mindfulness training was attended at least once by 81.3% of the participants, and 54.5% was highly compliant (i.e. at least 75% of the intended dose of 8 sessions). For e-coaching and homework exercises high compliance was found for 6.3% and 8.0%, respectively. The training was appreciated with a 7.5 and e-coaching with a 6.8. Appreciation of training and e-coaching, satisfaction with trainer and coach, and practical facilitation was significantly associated with compliance. We concluded that the intervention was implemented well on the level of the mindfulness training, but poorly on the level of e-coaching and homework time investment. To increase compliance, attention should be paid to satisfaction with the trainer and coach and the trainer/coach-participant relationship.

Chapter 5 described the evaluation of the effectiveness of the Mindful VIP intervention on work engagement, mental health, need for recovery and mindfulness in an RCT. At baseline, 257 employees of two Dutch research institutes were included. Loss to follow-up after 12 months was 9.1%. Effects were analysed using linear mixed effect models. There were no significant differences in work engagement, mental health, need for recovery and mindfulness between the intervention and control group after 6 and 12 months of follow-up. Additional analyses in compliance subgroups (high and low compliance to the training versus the control group as a reference), and subgroups based on baseline work engagement scores showed no significant differences either. Therefore, we concluded that the Mindful VIP intervention did not improve work engagement, mental health, need for recovery and mindfulness after 6 and 12 months.

Chapter 6 evaluated the effects of the Mindful VIP intervention on vigorous physical activity in leisure time, sedentary behaviour at work, fruit intake and behavioural determinants in an RCT. Outcome measures were assessed at baseline and after 6 and 12 months using questionnaires. Vigorous physical activity was also measured using accelerometers among a randomly chosen subgroup (n=100). Effects were analysed using linear mixed effect models. There were no significant differences in lifestyle behaviours and behavioural determinants between the intervention and control group after 6 or 12 months. Therefore, the effectiveness of the Mindful VIP intervention as a worksite health promotion intervention to improve lifestyle behaviours could not be established.

Chapter 7 presented the economical evaluation of the Mindful VIP intervention. The intervention costs were €464 per employee (employers' perspective). After imputation of the data, a statistically significant, but non-meaningful adverse effect on work engagement (β -0.19; 95%CI -0.38 - -0.01; i.e. decrease of 0.19 on a scale from 0 to 6) was found after 12 months. There were no differences in job satisfaction, general vitality, work ability or total costs. It appeared that the Mindful VIP intervention was neither cost-effective from a societal perspective and from an employers' perspective, nor provided any return on investment. Therefore, this study provided no evidence to support implementation of the Mindful VIP intervention.

In **chapter 8**, we explored the views of stakeholders involved in worksite health promotion in focus group discussions. Consequently, we described the ethical considerations that result from differences between these views. Our analyses showed that although the definition of occupational health was the same for all stakeholders, namely 'being able to perform your job', there seemed to be important differences in the views on what constituted a risk factor to occupational health. According to employees and labour unions, risk factors to occupational health were prevalently job-related. Other stakeholders particularly saw employee-related issues, such as lifestyle behaviour, as risk factors to occupational health. This translated into a comparable categorisation in the definition of worksite health promotion; employee-related activities and work-related activities. It also resonated in the way

stakeholders understood 'responsibility' for lifestyle behaviour. Even though all stakeholders agreed on whose responsibility lifestyle behaviour was, namely that of the employee, the meaning of 'responsibility' differed between employees, and employers. For employees, responsibility meant autonomy, while for employers and other stakeholders, responsibility equalled duty. Implications of this study firstly entail that all stakeholders, including employees, should be given a voice in developing, implementing and evaluating worksite health promotion. Secondly, since stakeholders agreed on lifestyle being the responsibility of the employee, but disagreed on what this responsibility means (duty versus autonomy), it is of utmost importance to examine the discourse of stakeholders. This way, ambivalence in relationships between stakeholders could be prevented.

In **chapter 9**, the main findings were discussed and interpreted. Furthermore, recommendations for research and practice were presented. Regarding the main findings, it may seem as if the results on work engagement of chapter 5 and chapter 7 are contradictory, as the effect evaluation did not show an effect, whereas the economic evaluation did show a statistically significant effect. This difference in results was caused by different analysis techniques, where for the economic evaluation data was multiply imputed to enlarge statistical power for the cost-outcomes. In the effect evaluation, data was not imputed, because loss to follow-up was lower than anticipated in the power calculation. Although there was a difference in statistical significance, the size of the effects was comparable in both studies and in addition, the small size of the effect could be regarded as non-meaningful. Overall, it can be concluded that the Mindful VIP intervention (a worksite health promotion intervention consisting of 8 weeks of mindfulness-related training, 8 sessions of e-coaching, 6 months of fruit provision, a buddy system and lunch walking routes), was not (cost-) effective on work engagement, and other mental health outcomes, nor was it effective on lifestyle behaviours, and behavioural determinants. Therefore, large scale implementation of the Mindful VIP intervention in its current form can not be recommended for a healthy working population. However, considering the indications that effects might have been missed due to, for example, a too low dose, the rigid design, and measurement issues, more research into the effects of

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mindfulness-related training with a population health approach is needed. Both the results of the trial and the exploration of ethical considerations indicate that worksite health promotion research and practice should have an integrated approach, in which both contextual (i.e. work-related, environmental and collective) and individual factors are considered. Such an approach would increase the potential effectiveness of worksite health promotion and would take into account ethical issues.