Chapter 7

General discussion
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This chapter summarizes and reflects on the main findings of this thesis, discusses methodological limitations, and formulates recommendations for policy and future research.

Main findings

The objectives of this thesis were:

i. To investigate how the implementation of measures to promote sustainable employability in the construction industry can be improved, and

ii. To evaluate the implementation of a lifestyle intervention in the construction industry.

Objective i: To investigate how the implementation of measures to promote sustainable employability in the construction industry can be improved

The study on the effect of obesity and physical workload on work ability (chapter 2) indicated that obesity, and to a lesser degree overweight, increased the risk of poor/moderate work ability. An increase in body weight over time contributed to the risk of poor work ability, independent of prior body weight status. High physical workload was also related to poor work ability, with a greater effect of strenuous work postures than of manual material handling. The combination of obesity with high physical workload had a synergistic effect on work ability.

The study on implementation barriers and facilitators of employer measures to promote sustainable employability (chapter 3) showed that employers were most likely to implement measures targeting the work environment and less likely to implement measures targeting employee health, personal development, or the organization of work. Large companies were more likely to implement measures than small companies. Employers were influenced in their decision to implement measures by economic feasibility, availability of personnel and expertise, rules and regulations, client demands, employee demands, company vision, and company culture.

Employees’ opinions regarding strategies to increase their sustainable employability (chapter 4) showed that both blue and white collar workers were most likely to use those measures offered by the employer that targeted personal development. Blue collar employees sought to increase their sustainable employability by using equipment to reduce physical workload, by
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making suggestions to improve working conditions, and by seeking promotion to a physically less demanding job. White collar workers aimed to increase their sustainable employability by engaging in leisure time physical activity and by creating an adequate work-life balance. The adoption of sustainable employability-promoting behavior was influenced by the employees’ awareness and self-efficacy, the accessibility of the strategy, the costs and benefits of the strategy, as well as the level of support from management and company culture.

Objective ii: To evaluate the implementation of a lifestyle intervention in the construction industry

The study on anticipated barriers and facilitators for the implementation of the lifestyle intervention Health Under Construction (chapter 5) showed that employees thought they would participate when they considered themselves at risk, when they thought the intervention had added value, when they received social support at home and at work, when participation had minimal interference with work, and when they had little need for independence from care providers. Professionals working for an occupational health service (OHS) thought that implementation of Health Under Construction would be facilitated by sufficient time, proficiency in skills necessary for implementation, financial incentives, a good fit with their work routine, contribution to their primary task, and the absence of adverse effects on their collaboration with other professionals.

After large scale implementation of the Health Under Construction intervention, results from the process evaluation (chapter 6) indicated that implementation had failed to reach the target population; merely 2.4% participated. Lifestyle counselors were not proficient in motivational interviewing and the majority of the participants dropped out before the prescribed five counseling sessions. Most trajectories included five out of six components described in the intervention protocol. The suboptimal implementation notwithstanding, employees were satisfied with the intervention and evaluated the counselors as competent. Counselors were moderately satisfied with the intervention. An additional investigation indicated that occupational physicians had informed only those employees they deemed motivated to change their lifestyle and were not being treated already for cardiovascular risk factors by the curative sector. This selection resulted in a large portion of the target group not being informed about the intervention, which can in part explain the low reach of the intervention.
Reflection on findings

How to promote sustainable employability of blue collar workers

The findings of this thesis indicate that especially blue collar construction workers were at risk of poor sustainable employability (chapter 2-4), and several factors that contributed to that risk, such as high physical workload and lack of supervisor support, are especially prevalent among groups with low educational level and/or low occupational class (1; 2; 3). It is estimated that 37% of all construction workers have a low educational level (4), and this percentage is bound to be much higher among blue collar construction workers than among white collars. While not all blue collar workers may fall in the low socio-economic status (SES) category, it has been demonstrated that low educational groups are hard to reach for health promotion programs (5), and these hard-to-reach groups are those we have most to learn from about implementation. Therefore, I will discuss which lessons can be drawn from the literature about health promotion among low socio-economic groups, and analyze how the results of this thesis on workers in the construction industry relate to findings reported in the literature.

Determinants of socio-economic health inequality

In general, groups with a higher SES, indicated by either higher level of income, educational level, or occupational status, are healthier than low socio-economic groups. In the Netherlands, people with the highest income class can expect to live 7 years longer and 18 years longer in good health than people from the lowest income class (6). The health disparity for educational level shows similar results (4). Excess health risk due to low SES is attributed on the one hand to differences in environmental factors, such as access to ergonomic equipment or exposure to high physical workload, and on the other hand to differences in behavior, such as leisure time physical activity or using ergonomic equipment (if available) at the workplace. Occupation appears to contribute to socio-economic health inequalities through two causal pathways: individuals with poor health are more likely to enter harmful occupations, and harmful working conditions cause a deterioration in health (7). Two well researched occupational health risk factors are high physical workload and low job control. Ravesteijn et al. (2013a) showed that blue collar workers have both a higher exposure to physical workload and lower job control than white collar workers. They estimated that an increase of one standard deviation in exposure to manual materials handling, which is
comparable to the difference in exposure between a mail sorter and a brick layer, during one year just before reaching retirement age, has a negative effect on health that is comparable to aging 14 months. Low job control is also harmful: a one standard deviation decrease in job control, which is comparable to being a nurse instead of a physical therapist, after the age of 60 years, has a negative health effect that is comparable to aging 20 months. Ravesteijn et al. (2013b) remark that they did not correct for health behavior; thus the observed effects represent the combined effects of exposures in the occupation and health behavior, which can partly be considered as response to occupation.(8)

There is an ongoing debate about whether environmental or behavioral factors are greater contributors to health inequalities(9). A longitudinal study among residents of the area surrounding the Dutch city Eindhoven demonstrated that differences in mortality between educational groups was explained for the greatest part by material factors (such as financial difficulties), then by psychosocial factors (such as life events), and then by behavioral factors (such as smoking). Including different factor combinations simultaneously showed that there was overlap between the explained variances of material, psychosocial and behavioral factors. Especially the effect of behavioral factors could for a great part be explained by material and psychosocial factors.(9) For example, in an Australian study, low SES groups were less likely to engage in leisure time walking, which was explained by limited access to sidewalks and attractive neighborhoods.(10) In our study on employee strategies to increase their sustainable employability (chapter 4), blue collar employees indicated they were not motivated to engage in leisure time physical activity, because the high physical workload caused a need for recovery after work. White collar workers, in turn, felt the need for physical activity during leisure time in order to reduce feelings of stress. This illustrates how working conditions might influence health behavior, and it indicates that interventions aiming to promote a healthy lifestyle of construction workers would ideally target both environmental and behavioral factors. Similarly, chapter 4 showed that the low reach among blue collar workers was due to employers offering fewer measures to blue collar workers on the one hand, and on the other by blue collar workers making less use of these measures as compared to white collar workers. This indicates that interventions need to target both employers and employees. While the call for targeting multiple levels may be old news, the question of how this can be done is still highly relevant.
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Total Worker Health – an example of how to reach blue collar workers

The interviews with employers and employees indicated that sustainable employability promotion is barred by a classical social dilemma, where both parties tended to attribute responsibility to the other party. For instance, in order to reduce negative health effects of high physical workload, employees stressed the employer’s responsibility to invest in machines to reduce physical workload and were reluctant to engage in leisure time physical activity when they felt the need to recover from high physical workload. Employers, in turn, stressed that investment in machines depended on economic feasibility and pointed to the employees’ responsibility for a healthy lifestyle. An approach that elegantly addresses this dilemma is the Total Worker Health (TWH) approach developed by the National Institute for Occupational Safety and Health (NIOSH, USA). TWH combines interventions at the employer and employee level and shows promising results for both effectiveness and reach among blue collar workers. For example, a study evaluating a worksite cancer prevention program showed that blue collar workers were more than twice as likely to quit smoking if the smoking cessation intervention was combined with management efforts to reduce exposure to dangerous substances. In the construction industry, an intervention that combines employer investment in the reduction of physical workload with employee engagement in leisure time physical activity might promote commitment from both sides. An approach that addresses determinants at both the individual level and the work environment level is also in line with the definition of sustainable employability by Van der Klink et al. (2016), which is used as theoretical basis in this thesis.

Next to targeting environmental and individual factors, TWH addresses several other implementation determinants that were identified in this thesis, namely employee voice, management support, and risk perception. TWH proposes fostering management commitment by creating management accountability for the health effects of investment decisions, or by incorporating worker health in the company vision. A participatory approach, where employees and managers jointly steer the implementation process, is proposed to enhance stakeholder ownership and employee voice. Employee voice and their influence on investment decisions was a core theme in the interviews with employers and focus groups with employees (chapters 3 and 4), and it showed that management commitment at all levels had influence. Aligning health promotion with the company vision was named as a facilitator by employers (chapter 3). While the contribution of these mechanisms has not yet been
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disentangled, a process evaluation of a TWH project aiming to promote a healthy lifestyle suggests that management commitment, worker participation, and a history of good working relations between employees and management accounted for high participation rates. (14)

Sorensen et al. (2002) hypothesized that the program credibility was enhanced because the program addressed risk factors that were deemed relevant by the target group. Risk factors are perceived as greater when they are uncontrollable and unavoidable (15), such as harmful exposures at work. In the study on sustainable employability, construction workers considered it counterintuitive to get healthy by engaging in leisure time physical activity, while exposure to high physical workload was the primary health risk factor (chapter 4). Low perceived risk and low perceived added value were barriers to the use of measures (chapter 4), as well as to participation in the Health Under Construction intervention (chapter 5). Sorensen et al. (2002) used the synergistic effect on cancer of exposure to toxic substances and smoking in the risk communication. The same communication strategy might be applied regarding the synergistic effect of obesity and high physical workload on musculoskeletal disorders (chapter 2). Korshoj et al. (2016) successfully reduced cardiovascular risk in workers exposed to high physical workload through exercise programs to increase the physical capacity. (16) While Korshoj et al. chose to have the intervention implemented during working hours, an alternative that might be more acceptable to employers might be the combination of work environment improvements with lifestyle improvements during leisure time. In summary, both access to and use of health promotion measures might benefit from an integration of interventions that are deemed relevant by the target group, and that target both the work environment through the employer and individual behavior through the employee.

Although not identified as a core element of TWH, the program takes into account low levels of education and health literacy by relying as little as possible on written material. (14) As TWH targets low educational groups, this might have been an important condition for reaching the target group.

One drawback of TWH is that this approach was mainly developed and tested for large companies. (17) Although Hunt et al. (2007) in their process evaluation explicitly refer to small businesses, (14) companies with less than 500 workers would be considered large in the Dutch construction context, which largely consists of small and medium sized enterprises. The
trademark of TWH is the integration of health promotion and health protection programs that previously operated in isolation; (11) this seems typical for large companies, not for companies with less than 50 employees, which make up the majority of Dutch construction companies. (chapter 3) Also, Sorensen et al. (2013) identified structural monitoring and evaluation of health interventions as one core element, which might be a tall order for small companies. (chapter 3) More research is needed to translate the approach to companies with less than 50 employees. (17)

The studies on the TWH approach are some of the few studies that investigate intervention effects on different socio-economic groups. (18) While the determinants of socio-economic health inequality are well researched, there is a startling paucity on research on how health inequality can be overcome. This might be due to lack of studies on environmental interventions, let alone the combination of intervention studies that focus on both levels, and research tackles this issue may be an important step towards reducing health inequalities.

In summary, TWH is a good example of how several of the implementation determinants that were identified in this thesis can be addressed in a way that both white and blue collar workers can achieve significant health gains. However, more research is needed that translates and evaluates the working mechanisms of the program to small companies.

**Taking into account health literacy**

Low SES groups are not only hard to reach, they also profit less from available facilities. For example, a recent meta-analysis of 36 randomized controlled intervention trials indicated that low SES groups benefited less from health interventions than high SES groups. (19) Health literacy may be one of the factors that contribute to the health inequality. There is evidence that health literacy mediates the relation between educational level and health. (20) Health literacy is defined in three dimensions: functional health literacy refers to basic reading and writing skills, communicative health literacy means having the cognitive and social skills necessary for participating in activities, and critical health literacy implies a person has the cognitive and social skills to exert control over one’s life. (21) People with low educational level are less likely to use preventive care facilities, which is in part explained by low health literacy. (22) Part of this might be explained by a different risk perception. A low level of health literacy and a low level of education were associated with limited knowledge of and
misguided beliefs about cardiometabolic health risk among construction workers.\(^{23}\) A qualitative study also showed that construction workers misinterpreted the concept ‘elevated risk’.\(^{24}\) Workers with a lower level of education tended to think of illness as a dichotomous state where you are either healthy or ill. As was found in employees in the construction industry (chapter 5), workers tended to reject the outcome of the risk assessment and to downplay their personal risk. Since the recruitment process for Health Under Construction relied on risk assessment and risk communication, it is possible that low levels of health literacy might have played a role in the low enrolment of low educational level employees in Health Under Construction.\(^{25}\) Risk perception was also identified as a barrier for employee participation in Health Under Construction and use of sustainable employability measures.\(^{\text{chapters 3 and 5}}\) Damman et al. \textit{(2016)} proposed ways to adapt risk communication to the beliefs of low level health literacy groups, such as communicating in terms of good and bad, and making risk assessments more elaborate in order to increase credibility.\(^{24}\) A qualitative analysis of health promotion materials targeting Dutch truck drivers showed that the material was not tailored to the needs and abilities of a low health literacy target group.\(^{26}\) An improved risk communication through information material and through occupational physicians might increase the reach among workers with a low level of education.

\textit{Taking into account cognitive capacity}

Many interventions incorporate counseling techniques to attain behavior change. Health Under Construction uses motivational interviewing, which strives to promote behavior change by evoking cognitive dissonance after discussing underlying motives for the current and the aspired behavior. While it might be hypothesized that motivational interviewing puts excessive load on cognitive capacity of a target group with a low educational level\(^{27}\) there is also evidence that motivational interviewing is effective among low socio-economic groups\(^{28; 29; 30}\). Motivational interviewing has proven effective in increasing health literacy\(^{31}\) and preventing drop-out\(^{32}\) in health interventions. Sorensen et al. \textit{(2007)} developed a lifestyle intervention consisting of motivational interviewing coaching, which proved to be effective among blue collar workers.\(^{30}\) Although health literacy and cognitive capacity are certainly influencing factors in reaching blue collar workers, motivational interviewing appears to be an adequate method.
Implementation research

During the course of this research project, we encountered two issues relevant to current implementation science: the study design and the framework.

Study design
Chapters 3, 4, and 5 focused on the identification of barriers and facilitators, or implementation determinants. Although the identification of barriers and facilitators is the first step required for the development of tailored implementation strategies (33), little insight was gained into the effectiveness of those implementation strategies. The process evaluation indicated that the implementation process as a whole had failed on several indicators, but the data provided little insight into the effectiveness of specific implementation strategies. Although some qualitative data was gathered on the recruitment process when the monitoring indicated a low influx of participants, this was not based on a structured approach. This pragmatic approach was fine for practice, but suboptimal for scientific purposes. A controlled pre-post measurement design of barriers and facilitators allows for conclusions about the effectiveness of the implementation strategy. Van der Molen et al. (2005) measured the stages of change at the individual worker level and the cluster level before and after implementation of a participatory ergonomics program (34). Based on this detailed assessment, the researchers could draw conclusions on why implementation had failed, e.g. that worker motivation was high, but compliance was low. Fink et al. (2005) also used a pre-post design to evaluate implementation strategies for research utilization by nurses, allowing them to identify those strategies with the largest effect (35).

An alternative explanation for the low reach is that the implementation strategies were effective, but that the wrong barriers had been targeted. Although there is evidence that expert consultation is a valid method to select potentially effective implementation strategies, a quantitative approach may be more valid (36). Quantitative measurement of the association of determinants with implementation outcomes gives insight into the occurrence and relevance of determinants. For example, a study on the implementation of ergonomic equipment in nursing homes and hospitals found that only a few of the identified barriers and facilitators were associated with actual use of the equipment (37).
Admittedly, these research designs require significant time and resources to carry out, and were beyond the scope of this thesis. Also, the need for scientific rigor may be at odds with the feasibility of implementation.\(^{(36)}\) This might in part explain the large amount of descriptive, cross-sectional studies on implementation determinants, while prospective, regresional studies on determinants and implementation strategies are lacking. Some researchers even pleaded for a halt to cross-sectional and descriptive studies in favor of prospective and regresional study designs, in order to further implementation science.\(^{(38; 39)}\) The dilemma between the need for quick and practical results on the one hand and scientific rigor on the other is relevant in all research fields, but may be even more important in implementation research.

In conclusion, this thesis contributed to our knowledge about barriers and facilitators to implementation in the construction industry. However, to move forward our knowledge on implementation in the construction industry, more research is needed that relates determinants to implementation strategies and implementation outcomes.

**Framework**

In this thesis, we repeatedly applied the model by Fleuren, Wiefferink and Paulussen (2004), which was developed to explain implementation by health care professionals located in complex health care institutions.\(^{(40)}\) In this model, the end-user was defined as one aspect of the socio-political context. Several implementation determinant models seem to award minimal attention to the end-user, possibly indicating a need for research on the influence of the end-user on implementation.\(^{(41)}\) Since the end-user had a prominent place in our studies, we modified the model by making the end-user a stand-alone category. Although this enabled us to apply the model to all stakeholders, the model was comparatively non-specific regarding the determinants of employee behavior: determinants such as employee attitude and social support from their partner ended up lumped together in the end-user category.

The Health Action Process Approach HAPA model is an example of a more complex model of health behavior.\(^{(42)}\) It incorporates validated behavior determinants, such as self-efficacy and risk perception, as well as phases of behavior change, such as the initiation of behavior and maintenance. While a generic model merely categorizes determinants, a complex model allows for formulating hypotheses about the chronological order in which determinants may
affect behavior, and how the determinants relate to each other. Groenenberg et al. (2015) used a similar model, the I-Change Model by de Vries et al. (2004) (43; 44), and found it useful for explaining participation of the target group in health screening. A note of caution seems in order: when the constructs in the model are addressed explicitly during the interviews, an inductive study might turn into a deductive study. Van der Molen et al. (2005) developed and applied behavioral change phases, which were based on the work of Rogers (45) and the Transtheoretical Model of Behavior Change (46), to explain use of ergonomic equipment by workers on the one hand and implementation of equipment by employers on the other. (34; 47; 48) These models give a comparatively detailed account of behavior change at the individual level.

In short, a generic model might be applicable to a variety of stakeholders, but might also be too simplistic considering the extensive knowledge available about individual behavior change. Although the idea of a unifying framework that explains implementation processes in the whole of public policy seems appealing, and steps have been taken to come to a more homogenous use of constructs, (49; 50; 51), the complexity of implementation makes it likely that a multitude of models will remain. (41)

In implementation science, a myriad of frameworks and models is available. Tabak et al. (2012) identified 61 frameworks or models. (52) Implementation researchers have expressed concern about implementation studies being insufficiently comparable, due to a changing use of terminology, a lack of detailed description of how constructs were operationalized, or not being based on any framework. (49) When studies are incomparable, this prevents the field from converging on a few accepted and validated frameworks. In this thesis, we chose to stick to the process model by Linnan and Steckler (2002) (53) in order to maximize comparability with the studies performed during the randomized controlled trial by Groeneveld et al. (54) The increasing availability of open access journals may enable researchers to provide the field with more detailed descriptions of interventions, strategies, and constructs.

Methodological issues

Specific methodological issues are discussed in the individual chapters. This section discusses overarching methodological issues linked to the design of the studies.
Qualitative research

Chapter 2, 3, and 5 were based on qualitative methods. Qualitative methods are valuable for exploratory research when there is not much prior information on the subject, and for gaining in-depth understanding of complex and context dependent matters. (55) As any type of research, qualitative research is vulnerable to certain types of bias. Focus groups carry the risk of promoting social cohesion at the cost of suppressing deviant views. (55) For example, the questionnaire data on employee strategies to increase sustainable employability indicated that a sizable group of blue collar construction workers engages in leisure time physical activity, but this was not reflected in the focus groups. (chapter 4) To encourage all focus group participants to openly express their views, we used an experienced moderator, who strove to create a psychologically safe setting and posed probing questions to all participants present. (55) While focus groups have a high risk of group pressure, individual interviews carry the risk of social desirability towards the interviewer. (55) During the interviews with employers (chapter 3) or employees and occupational health service professionals (chapter 5), the willingness to implement might have been overstated. The risk of bias is higher for hypothetical questions, (56) such as was the case in chapter 5. Especially the employees, who had little information about the intervention, might have been prone to such bias. It was observed that interviewees grew impatient during the course of the interview, possibly due to an increasing feeling of cognitive dissonance, or having to explain themselves and presumably being judged by the interviewer for not wanting to participate in the intervention. It is therefore recommended to keep such interviews short.

Furthermore, qualitative data analysis is vulnerable to invalid interpretation when coding the data. (55) In order to increase validity, we used two coders to determine the codes. As several stakeholders were interviewed (employers and employees; occupational health service professionals and employees), the subject was investigated from different perspectives, which allowed for validation of the findings.

Generalizability of the findings

All five studies (chapters 2-6) were conducted among Dutch construction workers; the generalizability of the results to other occupational populations might be limited. First of all, implementation depends on the context, such as the health care systems, occupational health and security rules and regulations, or pension schemes. The studies included in this thesis
describe relevant contextual aspects in order to provide insight into potential limitations to generalizability. The same is true for the construction industry, which is characterized by factors such as high turnover, a high percentage of male employees, which limits generalizability of the findings to other industries. Nevertheless, the results described in this thesis may provide a valuable starting point for research on sustainable employability promotion among other target groups.

White and blue collar workers in the construction industry are clearly distinct populations. While the studies on sustainable employability (chapters 2, 3 and 4) distinguished between these blue and white collar workers, the studies on the lifestyle intervention Health Under Construction were based on small samples, and therefore reported the results for the entire population of employees in the construction sector (chapters 5 and 6). With the aim of generalizability in mind, it seems advisable to distinguish these two populations in future research projects. Making this distinction can also help to devise strategies tailored to the specific needs of blue and white collar workers. (19)

Internal validity may be limited due to low response rates. The study based on periodic medical examination data was estimated to include about 50% of the population of construction workers. The two questionnaire studies among construction employers and employees (chapters 3 and 4) had a much lower response rate (6-11%). The focus groups with employees (chapter 4) included only employees of large companies. We therefore must consider the conclusions drawn as an indication, which needs validation by other sources.

The concept sustainable employability
The concept of sustainable employability is a broad concept. According to Van der Klink et al. (2010), sustainable employability is related to the concepts of work ability, engagement, capacities, employability, a crucial aspect is the long time span covering a worker’s entire working life, and it is meaningful only when taking into account environmental as well as individual factors. (57) Although sustainable employability is a complex, dynamic concept that may be difficult to measure, it seemed in line with the conception of employers and employees. After some introduction of the term, the interviews with the employers were led about ‘sustainable employability’; the subject of the focus groups with the employees was ‘ways to keep working, motivated and healthy up to retirement’. The concept of ‘capability’,
which implies that both environmental and individual factors determine sustainable employability, and which is central to the definition put forward by Van der Klink et al. (2016) was in line with employers and employees stressing responsibility of both parties for taking measures. (13) The motivational aspect of ‘work as a value’, referring to the wish to make a meaningful contribution through work (Van der Klink, 2010), was in line with the central role that motivation and social cohesion at work played for employees. (57)

This thesis took a broad approach by interviewing employers and employees about the four domains of sustainable employability (work environment, health, personal development and organization) in chapters 3 and 4, and focused on employee health, and particularly on lifestyle and obesity, in the chapters 2, 5 and 6. Focusing on other aspects of sustainable employability, such as personal development and employability, was outside the scope of this thesis. The generation of in depth knowledge makes focus necessary. However, to gain a full understanding of what determines sustainable employability, research on other aspects of sustainable employability is necessary, particularly on employability related to personal development, and lifelong learning, as can be seen in the work of Sanders et al. (58)

Recommendations

Based on the discussion, the following recommendations are formulated:

**Recommendations for the construction industry**

- To increase the reach of interventions, it is recommended that programs combine interventions that target both the employer and employee level.
- Interventions at the employer level can enhance the credibility of the program if employers make visible investments that relate to the employee needs and which are prioritized by the employees themselves. More specifically, a program aiming to prevent musculoskeletal disorders might increase the reach among employees by combining employer investments that reduce exposure to physical workload on the one hand and employees engaging in leisure time physical activity on the other.
- The perceived relevance of a program might be enhanced by a communication strategy that stresses the synergistic effects of program components. More specifically, a program to prevent musculoskeletal disorders might stress the positive, synergistic effect of a
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reduced physical workload and body weight loss on the risk of musculoskeletal disorders.

- Implementation may be more successful supported by management at all levels. Management commitment can be enhanced by making management accountable for employee health benefits of investment decisions.

- Reach of interventions can be increased if implementation goals align with employee priorities. In order to promote employee voice during implementation, a participatory approach where employees and management jointly steer the implementation process is preferable.

- Given that health promotion may be hampered by low levels of health literacy in the target group, occupational physicians may be stimulated to improve their risk communication by providing occupational physicians with adequate training and sufficient face-to-face time with the target group.

Recommendations for research

- To increase our understanding of how to reduce socio-economic inequality, there is a need for studies on intervention effects for different socio-economic groups.

- In addition, studies might investigate the effect of programs that combine interventions at the individual and environmental level.

- To move implementation science forward, there is a need for quantitative studies that investigate the association of implementation determinants with implementation outcomes.

- To gain more insight into the effectiveness of implementation strategies, researchers should relate implementation strategies to implementation determinants and outcomes, using a pre-post measurement design.

- In order to enable implementation researchers to synthesize studies, researchers are encouraged to provide detailed descriptions of the way the concepts were operationalized.

- To increase our understanding of sustainable employability, there is a need for research on employability, personal development, and lifelong learning.
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