Chapter 1

General introduction
Sustainable employability

Due to improved standards of living and medical advancements, developed countries have witnessed a steady increase in life expectancy over the past century.(1) At the same time, birth rates have declined, causing a decrease of the working age population. The resulting imbalance in population size between the economically active and the economically inactive caused policy makers to take measures to increase labor participation. The most visible measures have been the raising of the statutory retirement age and the cutting of early retirement schemes. Making early retirement financially less attractive has indeed led to a higher average retirement age than before. For example, in the Netherlands, the average retirement age increased from 61 years to 64 years and 5 months between 2006 and 2015.(2) But these measures have also led to spillover effects on workers exiting the workforce due to unemployment or work disability, especially among workers with relatively low wages and an unfavorable health status (3; 4; 5).

Health status and the financial possibility to retire early have indeed been shown to be important determinants of early exit from the labor market.(6; 7) However, the motivation to work is also influenced by values such as wanting to make a meaningful contribution, or wanting continued personal growth.(7; 8) To capture the idea that sustainable labor participation is more than the mere possibility and necessity to work, Van der Klink et al. (2016) defined the term sustainable employability as such working conditions and personal resources that allow a worker to make a valuable contribution throughout his working life while maintaining his or her health and welfare.(9) Sustainable employability is a broad concept that is difficult to measure.(10) Meanwhile, work ability is based on a validated measurement instrument and its relation to other indicators of occupational health is well researched.(11) Work ability is defined as the ability to cope with one’s work demands, given a worker’s resources, including his health.(12) Since work ability is closely related to the concepts of motivation and health, work ability can be considered a proxy for sustainable employability.(10)

While researchers tend to investigate the characteristics of the individual worker, Van der Klink et al. have stressed that sustainable employability also depends on an enabling work environment.(9) In this thesis, the determinants of sustainable employability are divided into
four domains: the health status of individual workers, their personal development, their work environment, and the way their work is being organized.

**Sustainable employability in the construction sector**

Workers in the construction industry have been identified as an occupational group at risk of poor sustainable employability. (10) Indicators of labor participation also attest to poor sustainable employability: construction workers have, as expressed in the standardized incidence ratio (SIR), a higher risk of work disability than the general working population (SIR 1.47; 95% CI 1.41 to 1.53), as well as than the average blue collar workers (SIR 1.11; 95% CI 1.07 to 1.16). (13) This elevated risk is mostly due to musculoskeletal and cardiovascular disorders (5; 13; 14; 15). Those construction workers who do not leave the workforce through work disability have a high likelihood of early retirement. On average, in 2015, Dutch construction workers retired at an age of 63.6 years; 0.8 years earlier than the general working population. (2)

The construction industry is characterized by different risk factors of poor sustainable employability: an aging workforce, high prevalence of low educational level, high physical work demands, employment in small companies, and an unhealthy lifestyle. Between 2004 and 2014, the average age in the Dutch construction industry increased from 38.9 to 41.9 years. (16) In 2004, Dutch construction workers were seven months younger than workers in other industries; in 2014, they had caught up with the total working population. High age is found to be associated with an increased risk of occupational injury and duration of sickness absence (5; 17; 18) partly due to reduced cognitive, musculoskeletal, and cardiorespiratory capacity. (19). Aging workers are especially susceptible to musculoskeletal complaints, the annual incidence of which rises with 14% between the ages of 51 and 62 years, and with 25% among workers with high physical workload. (20) A Swedish study reports that the prevalence of musculoskeletal disorders in construction workers ranges from 7.5% in the hip to 23.1% in the shoulder, as compared to a prevalence in office workers that ranges from 4.3% in the wrist or hand to 16.6% in the lower back. (21)

Of all blue and white collar construction workers, 34% have a low educational level, as compared to 19% in the total working population. (16) Low educational level is associated with poor health (22), and subsequent elevated risk of work disability (23). These
socioeconomic health inequalities, which are defined by educational level, income, or occupation, are a persistent and increasing problem in health promotion. (22) The health disparity between socio-economic groups is partly attributed to differences in health behaviors, and partly to differences in exposure to environmental factors, including harmful working conditions. (24) Low socio-economic groups exhibit an comparatively unfavorable health status upon entering the work force, and the health inequality widens due to a selection effect into harmful occupations, such as occupations with high physical workload or low job control. (25) Indeed, blue collar construction workers experience relatively low job control in comparison with the general working population. (26)

Furthermore, the way construction work is being organized might contribute to the poor sustainable employability. Approximately 85% of all construction companies are small companies with less than 50 employees. (27) Due to financial and human resources restraints, small companies have been shown to be less likely to implement occupational health and security measures, and more prone to occupational injuries and fatalities. (28)

Construction workers have a relatively unhealthy lifestyle, when compared to the general population (obesity: blue collar: 66.1%, white collar: 62.4%, general population: 42.2%; (29; 30) morbid obesity: blue collar: 17%, white collar: 14.8%, general population: 12.2%; (29; 30) physical inactivity: blue collar: 62.7%, white collar: 51.5%, general population: 10.2% (30; 31)). Obesity is associated with cardiovascular and musculoskeletal diseases, the main reasons for disability in the construction industry (32; 33), and there is evidence that the combination of obesity with high physical workload has synergetic negative effect on work disability due to musculoskeletal and cardiovascular disease. (14) There is little research on the relation between determinants of sustainable employability. Thus, one of the aims of this thesis is to study the interaction between obesity and physical workload.

While blue collar construction workers are mostly confronted with high physical workload and low level of education, the sustainable employability of white collar construction workers is challenged by high levels of workload and stress. Boschman et al. (2013) found that white collar construction workers reported higher exposure to mental job demands and a greater need for recovery than the general working population. (26) Although stress symptoms may
be common among supervisors, there is no evidence of an increased risk of diseases or work disability.\(^{34}\)

A healthy lifestyle is an important and modifiable determinant of sustainable employability. The positive effect of a healthy diet and leisure time physical activity on obesity, type 2 diabetes and cardiovascular diseases are well documented.\(^{35}\) Obesity is also associated with work disability due to cardiovascular and musculoskeletal disorders\(^{32; 33}\), and beyond the effect of obesity, leisure time activity is associated with a lower risk of sickness absence\(^{36}\) and possibly work disability and unemployment\(^{23; 37}\). Recent studies have also demonstrated positive results of exercise on physical fitness, possibly buffering the negative health effects of high physical workload\(^{38; 39}\).

Considering the elevated prevalence of obesity and physical inactivity in Dutch construction workers when compared to the general population, the prevention of obesity and physical inactivity has a potential benefit for the sustainable employability in the construction industry. The lifestyle intervention Health Under Construction was developed to promote a healthy lifestyle among workers in the construction industry\(^{40}\). During the periodic medical examinations the employees in the construction industry are invited for every two to four years, the occupational physicians screened employees for an elevated risk of cardiovascular risk and referred those with an elevated risk to a lifestyle counselor. Within five to seven counselling sessions, the counselor used motivational interviewing to support employees in adopting a healthier diet or increasing their leisure time physical activity. The intervention was shown to be efficacious in body weight reduction and had a positive effect on several cardiovascular risk factors\(^{41; 42}\). Based on the effects of the intervention, it was decided to implement the intervention at a national level. Since effectiveness is only likely if an intervention is implemented according to protocol, and if the intervention actually reaches a significant proportion of the target group, the aim of this thesis was to evaluate the implementation process.

**Implementation of measures to promote sustainable employability**

The Dutch construction sector has a long tradition of health promotion, and there are numerous interventions available that target the work environment (e.g. a security check list for accident prevention), the individual worker’s health, (e.g. periodic medical examination),
personal development (e.g. certification of practically acquired skills), or the organization (e.g. a performance evaluation blue print). For most of those interventions, it is unknown whether they are effective, and whether they are being used by the target group. However, existing evaluations lead us to suspect that implementation is suboptimal. For example, Van der Molen et al. (2009) evaluated the implementation of ergonomic measures and their effect on musculoskeletal disorders among carpenters and pavers. The results showed that a national informational campaign reached 50% of the target group, and did not succeed in increasing the use of ergonomic measures.

The question of why theoretical knowledge fails to be translated into practice is often referred to as implementation gap. There are several theories to explain this gap. First of all, implementation is influenced by barriers and facilitators, which are located at different implementation levels. Fleuren et al. (2004) made an inventory of all factors that influenced the adoption of an innovation by a health care professional. They categorized the factors into barriers and facilitators that occur at the level of the socio-political context, the innovation itself, the health care professional, his organization, and the facilities of the organization. Implementation strategies (e.g. a promotional film on ergonomic equipment) target specific barriers (e.g. employer attitude towards ergonomic equipment). Ideally, implementation is proceeded by an investigation of barriers and facilitators, in order to devise specific implementation strategies.

According to Grol et al. (2013), implementation is not realized in a single step, but evolves through phases. Their model differentiates the phases orientation, insight, acceptance, implementation, and maintenance. Each phase asks for a specific type of implementation strategy. For example, during the acceptance phase, professionals with experience with the intervention can engage in discussion about the advantages and disadvantages of implementation with their colleagues, in order to counter unwarranted resistance to implementation. Meanwhile, during the maintenance phase, structural monitoring and feedback can ensure integration into the work routine.

While an inventory of barriers and facilitators is useful to prepare and optimize the implementation process, process evaluations have the aim to evaluate the quality of the implementation. There are several frameworks for process evaluations, one of them was
developed by Linnan and Steckler (2002).(47) Their framework describes several core process indicators: the portion of the target group that actually used the intervention (reach), which intervention components were delivered to the target group (dose delivered), which intervention components were used by the target group (dose received), and whether the intervention was executed according to protocol (fidelity). Linnan and Steckler (2002) stress that a process evaluation should be tailored to the specific process, and researchers should feel free to add elements that they deem essential for assessing the quality of the implementation process. It is often difficult to replicate effective interventions, because of unclear protocols and lack of crucial information about intervention delivery. A process evaluation is a description of crucial elements of the intervention. Linnan and Steckler (2002) also recommend to include a description of the recruitment process; an aspect that is important to replicate or improve the reach of the intervention. If the process evaluation is performed alongside an effect evaluation, or if an outcome variable is included in the process evaluation, such as is the case with the RE-AIM framework, then the process evaluation can contribute to theory development. If the intervention is evaluated as effective, relating process indicators to outcome indicators can give insight into those mechanisms that contributed to the effect. If the intervention is evaluated as ineffective, process indicators can show whether implementation was performed according to protocol, and therefore, if the null-effect should be attributed to theory failure or program failure.

To promote sustainable employability in the construction industry, implementation of the available measures needs to be optimized. By investigating to what extent measures are being implemented and used, and by identifying barriers and facilitators to implementation, recommendations can be made to more effective implementation. The focus of this thesis is therefore on the implementation of measures to promote sustainable employability.
Objectives and outline of this thesis

In order to improve sustainable employability of employees in the construction industry, insight is needed into the impeding and facilitating factors that influence the implementation of measures targeting sustainable employability. Therefore, this thesis has two primary objectives:

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

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

Based on these objectives, the chapters of the thesis are structured as follows:

Chapter 2 investigates whether physical workload moderates the relationship of obesity with work ability. Chapters 3 and 4 describe factors that influence employers and employees in their decision to implement or use measures that promote sustainable employability. Chapters 5 and 6 investigate the implementation of the lifestyle intervention Health Under Construction in the Dutch construction industry. The final chapter discusses the implications of the results and formulates recommendations for the construction industry and for future research.
References

General introduction


