

# Potential adverse outcomes of a Dutch combined lifestyle intervention for overweight and obesity: a scoping review

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## Abstract

*Background:* As the so-called “obesity epidemic” has risen to prominence in the public consciousness, a number of interventions aiming to prevent and treat overweight and obesity have been created. Most of them focus on changing individuals’ behaviors, and do not result in weight loss, but do potentially lead to multiple adverse outcomes such as weight stigma. Yet, these potential adverse outcomes are rarely addressed in publications about interventions for overweight and obesity.

*Objectives:* This research aimed to gain insights into the potential adverse outcomes of a Dutch combined lifestyle intervention, the BeweegKuur, where they stemmed from, and the extent to which they were reflected upon and reported by stakeholders.

*Methods:* A scoping review was used, which included a review of the scientific, policy, and general interest publications about the BeweegKuur, as well as a consultation exercise with stakeholders of the intervention.

*Findings:* 47 publications were analyzed and revealed two general assumptions, two theories, and four specific assumptions which underlie the BeweegKuur and influence its design, outputs, and outcomes. Several positive outcomes were also discussed in it, as were intended outcomes which failed to materialize. Potential adverse outcomes of the intervention, however, were not addressed. Thus, they were the main subject of the consultation exercise. It consisted of 8 interviews and revealed 4 potential adverse outcomes. It also showed that, when prompted, stakeholders are indeed aware of potential adverse outcomes.

*Conclusions:* There is a contrast between the lack of reflection and reporting of potential adverse outcomes in publications about the BeweegKuur and stakeholders’ personal awareness of them. Therefore, stakeholders must make efforts to reflect more critically on potential adverse outcomes of interventions for overweight and obesity, and must address them more systematically in publications.

## **Problem statement**

“If you are not like everybody else, then you are abnormal, if you are abnormal, then you are sick. These three categories, not being like everybody else, not being normal and being sick are in fact very different but have been reduced to the same thing”. (Foucault & Droit, 2004, p. 95)

The first use of the term “obesity epidemic” in a publication dates back to 1987 (Gilman, 2008). Since then, overweight and obesity have increasingly been medicalized on the grounds that they have been associated with multiple comorbidities such as type II diabetes, various types of cancers, cardiovascular diseases, asthma, gallbladder disease, osteoarthritis, chronic back pain, and depression (Guh et al., 2009; OECD/EU, 2016). Some countries, such as the United States, have gone so far as to qualify obesity as a disease in its own right (Kyle, Dhurandhar, & Allison, 2016). The creation of diverse interventions aiming to treat and prevent obesity has followed from this (Kass, Hecht, Paul, & Birnbach, 2014). As such, fatness has been constructed as a disease, and fat individuals as sick people needing to be cured.

However, many of the interventions – most of which focus on trying to change individuals’ behaviors and not more structural determinants of weight – do not result in the intended weight loss (Jain, 2005). What’s more, they have other adverse outcomes, such as weight stigma (Aphramor, 2005). There are varying degrees of consciousness about these adverse outcomes from public health professionals. For example, stigma is sometimes used intentionally in interventions because the designers believe that the potential positive outcomes, weight loss and health gains, outweigh the negative consequences of stigma (Callahan, 2013). Still, most potential adverse outcomes, or PAOs, of interventions for overweight and obesity are rarely discussed, and when they are, that discussion is often marginalized, and its authors discredited, both in academia and in popular media (Mansfield & Rich, 2013; Rich & Evans, 2005). Thus, this research will aim to gain further insights into

what the PAOs of interventions for overweight and obesity are, how the construction of obesity as a disease and other assumptions might have led to them, and how they are discussed in publications, both scientific and of general interest.

## **Theoretical Framework**

### **Adverse outcomes of weight-management interventions**

#### **Assumptions about weight and health**

Adverse outcomes are a risk of any intervention and can take many forms. They can also have several causes, such as misconstrued assumptions or flawed intervention designs. In this section, major PAOs of weight management interventions will be presented. The first is lack of effectivity: although these interventions are nowadays very common, many of them have only been tested in a highly controlled clinical setting, and on thoroughly selected participants (Linmans et al., 2011). Moreover, systematic reviews on the subject have found only small average weight loss effects (3 to 6 kilograms) over study periods of 48 months (Franz et al., 2007). This means that, although large budgets are attributed to these interventions, the expected returns on these investments rarely materialize.

This is due, in part, to the assumptions about weight that drive weight-management interventions. The main assumption is that weight is determined by energy intake and expenditure, such that if energy intake (the calories one receives from food and drink) is greater than energy expenditure (the calories one expends, usually through some kind of physical activity), the individual gains weight. There is little doubt that this energy balance equation plays a major role in determining weight. However there is a much bigger debate surrounding the more distal determinants of weight, which themselves affect energy intake and expenditure and, therefore, weight (Ball & Crawford, 2006). Indeed, research shows that weight and obesity are complex phenomena with a multitude of determinants such as sleep debt, genetics, epigenetics, homeostatic mechanisms, and our environment, many of which are not under individual control (Chandaria, 2014; Keith et al., 2006).

Another set of assumptions at cause for reducing the effectivity of interventions concerns the relationship between weight and health. Indeed, obesity has been linked to several chronic illnesses such as cardiovascular issues, musculoskeletal problems, type 2 diabetes mellitus (T2DM), and certain cancers, the occurrence of which has increased alongside the prevalence of overweight and obesity (ten Have, 2014). This has led to the qualification of obesity as an important risk factor for illness, and in some cases as a disease in its own right (Kyle et al., 2016). However, the link between weight and health may not be as simple as this suggests. For example, it has been shown that the relationship between BMI and all-cause mortality is not linear. Instead, only underweight (BMI < 18.5) and class II+ obesity (BMI>35) are correlated with significant risk of increased mortality, whereas overweight (25<BMI<30) is associated with decreased risk of mortality (Flegal, Kit, Orpana, & Graubard, 2013). Furthermore, while existing evidence shows that obesity is linked to decreased physical health-related quality of life, or HRQoL, it does not allow to conclude that weight-loss consequently increases physical HRQoL (Kolotkin & Andersen, 2017). Instead, overweight and obese individuals engaging in physical activity (hereafter PA) and maintaining a steady weight are on average healthier than individuals having attempted to lose weight (de Vries, 2007).

### **Social justice and interventions on weight**

Another common PAO of weight management interventions is injustice, which can take place in several manners. For example, governments often deploy numerous interventions in low-SES or migrant-background communities, as they, on average, have high rates of overweight and obesity (de Vries, 2007). However, these often target individuals' behaviors and energy balance, whereas citizens report that structural factors such as access to a variety of foods are more to blame (McPhail, 2013). Paradoxically, marginalized groups are also least likely to benefit from general public interventions. This may be due to the fact that intervention designs often fail to take into account accessibility. For example, they may require a certain level of health literacy, or access to public

transportation, or the ability to attend the intervention during work hours (Jones, Furlanetto, Jackson, & Kinn, 2007). Still, targeting these groups separately from the rest of the population may not always be beneficial as it can further categorize them as “problem populations” who refuse to adopt health behaviors if interventions do not attain the desired outcomes (McPhail, 2013).

Another adverse outcome to consider is the intrusion into personal, societal, and cultural values and habits that weight-management interventions can constitute. Food, PA, weight, and health have diverse places in life, meanings, and value for different people. Assuming that they are equally important or malleable for all intervention participants may infringe upon their privacy and autonomy (McPhail, 2013; van Amsterdam, 2013). For example, Dutch adolescents interviewed about healthy behaviors and weight explained that, although they reproduced popular discourse on the shame and individual responsibility over obesity, they often ate junk food themselves as eating out is part of their social lives and participating in it allowed them to have fun with their peers (van Amsterdam & Knoppers, 2017). Thus, interventions aiming to change such aspects of culturally or personally-valued behaviors might diminish aspects of health related to social interaction, but also position certain cultures or values as morally superior to others.

### **Weight stigma in and from interventions**

Weight stigma is perhaps the most common and well-known source of PAOs. It pervades almost all aspects of fat individuals' lives. The stigma often comes from friends and family, and is experienced in a variety of settings such as work, school, sports, public spaces, and healthcare (Himmelstein & Puhl, 2019). Consequently, weight stigma can also be found in the common consciousness: studies have shown that people react with disgust to obese individuals and that they experience more discrimination than several other marginalized social groups such as LGB or mentally ill individuals (Vartanian & Smyth, 2013). Due to its widespread reach, it is unsurprising that weight stigma is also found

amongst healthcare practitioners, or HCPs, and that many fat patients report experiencing it frequently in healthcare settings (Puhl & Brownell, 2006; Schwartz, Chambliss, Brownell, Blair, & Billington, 2003). Moreover, weight stigma is sometimes also used outright as a tool to encourage weight loss in intervention participants (Courtwright, 2013). In this way, weight stigma is both implicitly present in the common consciousness, and explicitly used as a rational means for weight loss.

Weight stigma is a dangerous adverse outcome of interventions, especially when internalized by stigmatized individuals, because its consequences on health, both physical and psychosocial, are manifold. For example, when encountered in healthcare, weight stigma can result in healthcare avoidance for stigmatized patients (Phelan et al., 2015). Stigma also does not affect everyone in the same way: coping response to the stigma is correlated with health outcomes. This is such that healthy coping responses (healthy eating and/or exercise) usually predict better mental, physical and psychosocial health outcomes, but negative affect responses (feeling sad, angry, or depressed) and maladaptive eating behaviors (overeating, using diet pills, undereating, vomiting for weight-loss) predict worse health outcomes (Himmelstein, Puhl, & Quinn, 2018). What's more, weight stigma can also be internalized, leading to Weight Bias Internalization, or WBI, wherein individuals co-opt negative stereotypes about weight and reproduce the resulting negative attitudes towards themselves. Like other types of stigma, weight stigma and particularly WBI have been linked to increased cortisol secretion. Cortisol is a stress-induced hormone, and long-term increased exposure to it can promote weight gain, due to its effect on eating behaviors and fat retention. It also facilitates illnesses such as hypertension, T2DM, and cardiovascular disease (Tomiyama, 2014).

### **Principlism: A framework for the analysis of adverse outcomes**

Lack of effectivity, injustice, and weight bias are all examples of common potential adverse incomes of weight-management interventions. However, it can be hard to identify

how and when they are an important issue, and how to deal with them. Thus, a tool is needed to create an informed discussion about PAOs.

Kahrass, Strech, and Mertz (2017) created such a framework to aid HCPs and other public health professionals consider the PAOs of interventions. They conducted a systematic review of adverse outcomes of children's obesity prevention campaigns and used a biomedical ethics framework to analyze them. Here, this framework will be extended to a weight-management lifestyle intervention for adults. This can be done because the framework itself is meant to be widely applicable, although some of the examples from the literature given in Kahrass et al. (2017) are specific to children.

Kahrass et al.'s (2017) framework is based on Beauchamp and Childress' (1979) approach to biomedical ethics. The original paper derives four clusters of moral principles from common morality to guide biomedical practice: respect for autonomy, non-maleficence, beneficence, and justice (all further defined in Table 1). The authors call this approach to biomedical ethics 'principlism'. Principlism aims to specify the four clusters of moral principles by narrowing the scope of moral norms they reflect, so that they can be applied to specific contexts and help healthcare practitioners make ethical decisions in their practice. In their framework, Kahrass et al. (2017) also added two more clusters of moral principles: efficiency of the intervention and legitimacy of the decision-making authority. These are drawn from Marckmann, Schmidt, Sofaer, and Strech (2015)'s framework for public health ethics, and ensure that Kahrass et al.'s (2017) framework is equipped to help HCPs and all those involved in the design, implementation, and evaluation of obesity interventions balance obligations that may be unique to public health, such as potential benefit to society versus potential harm to the patient.

The six moral clusters can help identify PAOs. For example, interventions that are inaccessible to certain sections of the population go against the principle of justice, and interventions resting on the assumption that weight is solely determined by energy balance



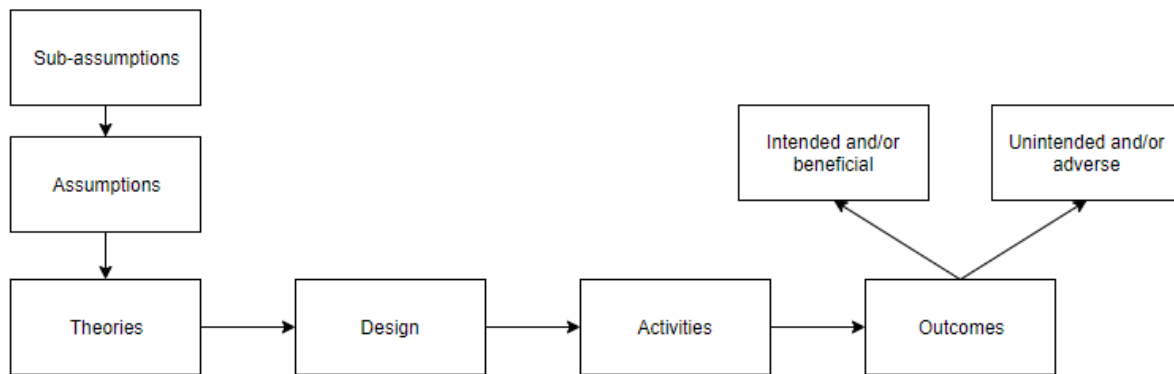
go against the principles of efficiency and beneficence. Weight stigma can also be positioned in this framework as going against the principle of non-maleficence as it may have adverse effects (Courtwright, 2013).

<b>Moral cluster</b>	<b>Definition</b>
Respect for autonomy	Use and respect of informed consent.
Non-maleficence	Avoidance of harm, “first, do no harm”.
Beneficence	Furthering of the patients’ and/or the population’s interests.
Justice	Fair distribution of goods and services (in this case, interventions).
Efficiency of the intervention	Higher cost-benefit ration than alternative strategies.
Legitimacy of the decision-making authority	Accountability of decision makers for transparency, a reasonable explanation, openness to revision, and regulation of adherence to these conditions.

**Table 1: Moral clusters of a principlism approach to weight management interventions (Kahrass et al., 2017; Marckmann et al., 2015)**

### **The Theory of Change approach: Understanding the origins of adverse outcomes**

The work of Kahrass et al. (2017) makes it possible for HCPs to identify, discuss, and try to balance PAOs of weight management interventions. However, a framework is still needed to better understand the processes leading to the occurrence of adverse outcomes, and when and how these processes take place. For this purpose, a Theory of Change approach will be adopted.



**Figure 1: Theory of Change approach**

The Theory of Change (ToC) approach is a kind of theory-based evaluation. It is centered around the theory of change (visualized in Figure 1), a methodology used to plan social change wherein theories are developed and used to inform the design and activities meant to lead to the desired outcomes. Theories usually consist of assumptions about the necessary pre-conditions and causal relationships that will link the intervention’s design and activities to its outcomes (Breuer, Lee, De Silva, & Lund, 2016). A ToC approach has the benefit of allowing the identification of the assumptions, causal links, and external factors which lead to the outcomes of the intervention. What’s more, evaluation-based designs tend to focus on what works, and not what doesn’t, hence sometimes overlooking PAOs (Bouffard & Reid, 2012). A ToC approach is then useful, even if the intervention was not designed using a ToC, because it allows a conversation about PAOs and their origins.

### **Research question**

This section has described two different frameworks, principlism and the ToC approach, which enable, respectively, the identification of PAOs and the analysis of their origins. Here, these frameworks will be used to analyze the PAOs of the BeweegKuur, a Dutch combined lifestyle intervention, or CLI. It was commissioned in 2007 by the Ministry of Health and started out as an intervention for (pre-)diabetic patients. Since 2010 the target population has been expanded so that overweight or obese individuals who are sedentary or suffer from co-morbidities can be also referred to the intervention by their general

practitioner (Helmink, van Boekel, & Kremers, 2010a). The intervention has been covered by mandatory basic insurance since January 2019 (Beroepsvereniging Leefstijlcoaches Nederland, 2018). The BeweegKuur has been the subject of a series of process evaluations, (cost-)efficiency and effectivity evaluations, and one RCT (Berendsen, 2016; Schutte, Haveman-Nies, & Preller, 2015). However, no literature pertaining explicitly to its ethical implications or PAOs has been published, seemingly reflecting the tendency to marginalize the discussion of the ethical aspects of interventions for overweight and obesity from the mainstream discourse around them. Thus, the research question will be: to what extent are potential adverse outcomes discussed in publications about the BeweegKuur, how are they related to the assumptions underlying the intervention, and do stakeholders engage in reflection about potential adverse outcomes, assumptions, and the relation between the two?

## **Methods**

The research question will be answered using a scoping review, as described by Arksey and O'Malley (2005) and adapted by Levac, Colquhoun, and O'Brien (2010). Scoping reviews are most useful for mapping a field of research in a relatively short amount of time. They are an alternative to systematic reviews which do not involve assessing the quality of the evidence and also allow for stakeholder involvement valuing practical experience with the topic of the research as much as the expert knowledge found in peer-reviewed literature (Arksey & O'Malley, 2005). Scoping reviews are best suited to broad research questions with a large and diverse evidence base and can help analyze the state and content of research on a certain topic as well as summarize, disseminate, and find the gaps in the existing research (Arksey & O'Malley, 2005).

There are six steps to a scoping review: (1) identifying the research questions, (2) identifying relevant studies, (3) study selection, (4) charting the data, (5) collating,

summarizing and reporting the results, (6) consultation exercise. All of these steps will be undertaken for this research and are explained in this section.

### **Identifying the research questions**

The research question is “To what extent are potential adverse outcomes discussed in publications about the BeweegKuur, how are they related to the assumptions underlying the intervention, and do stakeholders engage in reflection about potential adverse outcomes, assumptions, and the relation between the two?” Potential adverse outcomes will be identified using Kahrass et al.’s (2017) framework, and the underlying assumptions using a ToC approach.

### **Identifying relevant studies**

To answer the research question, the keyword “BeweegKuur” was chosen to search the online journal databases PubMed, Scopus, CINAHL, and Web of Science. All documents in Dutch or English and dating from 2007 to the present were included. 44 documents were identified from this search. As it is common practice in scoping reviews to search the databases of relevant organizations, a further 79 documents were identified using the same inquiry in the document databases of the Dutch organizations Nivel, ZonMW, Locketgezonleven, and Kenniscentrum Sport.

### **Study selection**

48 duplicates were identified and removed from the collected documents, leaving a total of 75 documents. Then, the titles and abstracts of all documents were screened and 11 of them which did not pertain directly to the BeweegKuur were discarded. A first reading of all documents followed, leading to the exclusion of 16 more documents, which only summarized other documents, were not publicly available, or only briefly mentioned the

BeweegKuur. This left a total of 47 documents. A PRISMA flow diagram visualizes the study selection process in Figure 2.

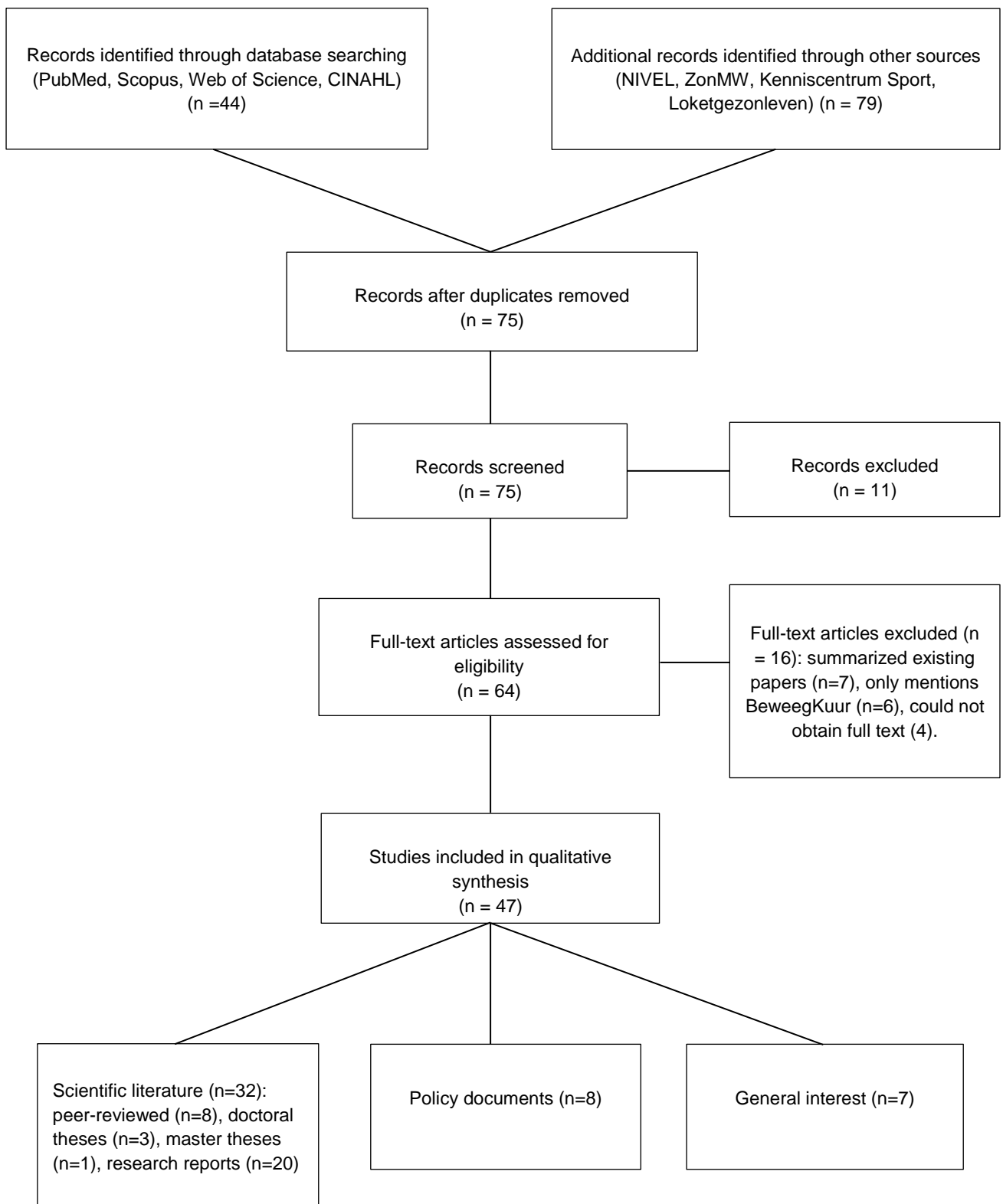


Figure 2: PRISMA flowchart of the literature selection

## **Charting the data**

The information retrieved from peer-reviewed papers as well as PhD and master theses were charted in a data extraction table. For every document, it recorded:

- the full reference
- the research question
- the study design
- the sample and recruitment
- the main outcome(s)

## **Collating, summarizing, and reporting the results**

A thematic analysis of the scientific literature, the policy documents, and the general interest literature was conducted as described by Braun and Clarke (2006). It is a process which focuses on identifying themes in the data based on their relation and potential for clarification to the research question, and not necessarily on the high frequency of the theme across the data set. The literature was analyzed in an inductive manner, meaning that themes were identified in the data not based primarily on either the principlism or ToC framework, but on whether they gave additional information about the PAOs, their relation with the intervention's assumptions, or stakeholders' discussion of them. The ToC approach was then used to organize the results and tie PAOs to their origins.

## **Consultation exercise**

According to Arksey and O'Malley (2005), the consultation exercise is an opportunity to consult with producers and consumers of the intervention being researched to add alternative perspectives to the ones found in the literature and begin the sharing process of the results. However, the authors list this stage as optional and provide few details about its function. Levac, Colquhoun, and O'Brien (2010), on the other hand, recommend to make the

consultation stage a mandatory part of the process, and to establish a clear and articulated purpose and method for it. Therefore, the consultation stage was used here as an opportunity to validate and complete the knowledge acquired in the first five stages.

Different types of stakeholders were contacted to participate in this part of the research:

- Intervention designers/owners;
- HCPs (GPs, physiotherapists, dieticians, and LSAs);
- Researchers/evaluators of the intervention;
- Governmental institutions;
- Patient interest groups (for diabetic and overweight or obese patients);
- And fat activists

They were asked to participate in an hour-long, semi-structured interview. The interviews aimed to use the interview subjects' expertise and experience to fill in gaps in the knowledge, as well as gather further data on stakeholders' perception of the BeweegKuur. The interviews were transcribed by hand. They were then the subject of a thematic analysis, using the same process as for the analysis of the literature.

## **Results**

### **Data description of the literature**

The different steps of the scoping review resulted in the inclusion of 47 texts in the analysis. The composition of the data set was as follows:

- 32 pieces of scientific literature, including 8 peer-reviewed papers, 3 doctoral theses, 1 master thesis, and 20 research reports;
- 8 policy documents;
- 7 general interest documents.

The collection and selection of the literature is visualized in Figure 2. The research question, study sample, methods, and main findings of the peer-reviewed papers and PhD and master theses are summarized in Appendix 1.

### **Thematic analysis of the literature**

A thematic analysis of the literature revealed four specific assumptions of the BeweegKuur. As described by the ToC framework, these assumptions shape the design and outputs of the BeweegKuur, and, in turn, result in a number of outcomes. Underlying these four assumptions are two overarching assumptions and two theories which, together, guide the overall vision and design of the intervention. The overarching assumptions and theories will be presented first, followed by the four specific assumptions.

The first overarching assumption constructs overweight and obesity as a major societal and public health issue. One PhD thesis' first section begins, "The numbers of people who are overweight or obese are increasing rapidly in Western societies" (Helmink, 2012, p. 8). This is an echo of the wider context in which the intervention takes place, with overweight and obesity being considered as one of the "spearheads" of health prevention in the Netherlands both for the 2006 and 2011 governments (Ministerie van Volksgezondheid Welzijn en Sport, 2011, p. 6).

The second overarching assumption suggests that prevention through the modification of individual behaviors is a preferable solution to the issue of overweight and obesity than care. "For the prevention of obesity, it is important to intervene even if there is 'only' an overweight (BMI 25-30)," one researcher cautions (Lassche, Preller, & Rutten, 2015, p. 4). Prevention interventions give at-risk individuals a chance to improve their lifestyle; according to the NISB (the former owners of the BeweegKuur), "They need a helping hand. With a little guidance, they can gradually change their lifestyle." (Marx, 2009, p. 41). Such a "helping hand" is useful because, "Through the BeweegKuur, people improve their quality of life. The chances of complications diminish, and thus there are less referrals



to specialists.” (Bolt & de Kort, 2011, p. 41). This is thus mainly a financial argument, “That prevention pays is not so much disputed. Prevention is one of the most important pillars for a healthy future society. [...] We spend 68.5 billion euros on healthcare every year; that is a total of 4,200 euros per inhabitant.” (Ekelmans, 2011, p. 24). This second assumption also finds its place in the wider context of the intervention, “A clear shift can be seen from curative care to preventive care. There is a social awareness that the behavioral component plays a major role in the course of chronic illness.” (Nederlands Instituut voor Sport en Beweging (NISB), 2011, p. 7)

The overarching assumptions are related to and supplemented by two theories that the NISB highlights as guiding the BeweegKuur. Like the assumptions, the theories insist upon individuals’ responsibility over their own behaviors and upon the benefits of professional guidance in aiding lifestyle changes. The first is the Self-Determination Theory, or SDT, which states that three components – autonomy, connectedness and competence – influence individuals’ motivation to change and/or maintain a behavior, which in turn influences their self-determination. The second theory is Motivational Interviewing, or MI, a method wherein an HCP increases patients’ motivation through cooperation, evocation, and autonomy by supporting them in their self-management (Wagemaker, 2018). The more specific assumptions of the BeweegKuur are based on the core beliefs produced by the overarching assumptions and the theories about why and how overweight and obesity should be addressed. The four main assumptions found in the literature concerned multidisciplinary guidance, self-management, integration of care and sports, and the group aspect of the intervention. They will be elaborated on in this section.

### **Multidisciplinary guidance**

The first assumption is an extension of the sub-assumption concerning prevention, and it can be related to the MI concept of cooperation. It states that, “The combination of overweight, inactivity and overeating play (in addition to heredity) a role in the development of diabetes and other chronic conditions” (Wagemaker, 2018, p. 19). Combined with the

belief that, “With interventions like the BeweegKuur, a big step towards positively influencing population health is taken, because PA and a healthy diet are important preventive measures” (Bolt & de Kort, 2011, p. 11), it leads to a design which emphasizes multidisciplinary guidance. This results in the accompaniment of participants by a multidisciplinary team composed of, at least, a GP, a physiotherapist, a dietician, and an LSA. The LSA, usually a nurse practitioner, coordinates the team.

Numerous outcomes resulted from the multidisciplinary aspect of the BeweegKuur. On the one hand, HCPs were satisfied with the increased professional cooperation: “For me, this collaboration is also the biggest benefit of the BeweegKuur. If I call a doctor now because I notice something with a patient, I don't have to explain anything further. He relies on my clinical expertise,” said one physiotherapist (Ekelmans, 2011, p. 24). On the other hand, whereas most participants increased their PA to some degree and then maintained it at about that level, eating behavior was more all-or-nothing: a small portion of participants changed their diet and maintained it, but others did not change it at all. What's more, only half of the participants went to a dietitian during the BK (Helmink, Van Boekel, der Sluis, & Kremers, 2011).

### **Self-management**

“The most ideal autonomous motivation is intrinsic motivation: then motivation comes from, for example, interest or pleasure. Because whoever does something because he likes it, naturally wants to continue to do so.” (Lassche et al., 2015, p. 3). This assumption underlies another key aspect of the BeweegKuur's design: self-management. This aspect of the intervention is strongly tied to the sub-assumption that individuals' behavior must be changed to prevent obesity, and to the concept of autonomy present both in SDT and MI. Such a direction was also chosen based on the belief that, “The treatment of obesity is basically entirely focused on supporting and promoting self-management. Although care providers can offer tailor-made support within the various phases of treatment, it is ultimately the patient who must implement and maintain the lifestyle change.”, but also that, “People

are responsible for their own lifestyle.” (NISB, 2011, p. 7). This entails a cooperative, bottom-up approach to HCP-patient relationships, in which HCPs’ main role is to increase participants’ self-efficacy and intrinsic motivation. (Wagemaker, 2018). This is done through cooperative goal setting, the transmission of knowledge about PA and diet, and the practice of MI (Visser & Plantinga, 2009; Wagemaker, 2018; ZonMW, 2014).

However, the resulting outcomes were mixed. One positive outcome was that 57% of LSAs and 76% of physiotherapists surveyed in one study reported having completed the MI training (although the sample sizes in this study were relatively small) (Visser & Plantinga, 2009). One study on the motivation of BeweegKuur participants also showed a significant increase in autonomous motivation to engage in independent PA during the intervention. However, participants’ diet behaviors continued to rely mostly on external motivation (Rutten et al., 2014). Additionally, another study reported that 50.4% of HCPs felt they were not able to use MI with all of their patients (Raaijmakers, Helmink, Hamers, & Kremers, 2013). Finally, it was found that participants in the supervised package of the intervention did not attend the prescribed number of sessions with the LSA and physiotherapist, such that they may not have benefited from MI as planned (Berendsen, 2016).

### **Integration of care and sports**

Another assumption of the BeweegKuur is that, “Physical activity is essential for good health.” (Marx, 2009, p. 40). This relationship between exercise and health is highlighted as being both direct and indirect, “[After the BeweegKuur, participants] experience better mobility, less pain and a better mood. This can trigger a positive spiral. After all: those who are more mobile and have less pain will move more and will be able to sustain this for longer.” (Lassche et al., 2015, p. 3). To achieve this so-called “positive spiral”, the design of the BeweegKuur put emphasis on the integration of care and sports: “Flow from care to sport: there is an attractive and suitable offer that ensures that people can maintain their behavior and make choices themselves.” (Wagemaker, 2018, p. 16), and particularly easily accessible sports, “For the target group of the BeweegKuur, the cooperation with exercise

providers of low-threshold exercise activities is most important.” (Leemrijse, Veenhof, & de Bakker, 2013, p. 21).

The integration of care and sports is facilitated through the creation of networks which connect the multidisciplinary teams of HCPs with other actors such as the municipality, the GGD, provincial sports councils, social workers and local exercise providers (Helmink, Raaijmakers, Rutten, Kremers, & de Vries, 2013, p. 89). In 2011, there were 154 networks at the local level, and 35 at the regional level (Bolt & de Kort, 2011). Additionally, social maps which plotted sports teams and other PA opportunities per region, and the function of BeweegKuur Instructor, or BKI, were created to assist the transfer of participants from physiotherapists’ practices to more informal and independent PA (Helmink, Meis, & Kremers, 2010; Raaijmakers et al., 2013).

These outputs resulted in some positive outcomes; namely the spread of social maps, reduced prices in certain sports venues, smoother cooperation between professionals of the two sectors, and increased participant PA (den Hartog-van den Esker, Wagemakers, Vaandrager, & Koelen, 2012; Wagemakers, den Hartog-van den Esker, & Vaandrager, 2011). However, these outcomes proved difficult to maintain: a study which showed that biking, walking, and fitness were the most popular forms of PA also revealed that maintenance of PA after the BeweegKuur was significantly correlated with living in a green environment and that fitness in particular was hard to maintain as an activity (Vries, Langers, Meis, Berendsen, & Kremers, 2016). Similarly, maintaining the networks and the social maps cost much time and energy, which impacted their sustainability (Helmink et al., 2013, p. 89; Leemrijse et al., 2013, p. 76).

### **Group aspect**

From the connectedness factor of SDT stems the assumption that, “Group dynamics and group bonding also play an important role in eventual behavioral change and behavioral retention.” (van Ballegooie & Aalbers, 2010, p. 175). It also relies on more specific beliefs

about the effects of group activities: “Group activities: this increases social cohesion and promotes intrinsic motivation,” (Wagemaker, 2018, p. 21). The BeweegKuur includes this assumption in its design and facilitates it by providing a mix of individual and group consults with the physiotherapist, the dietician, and sometimes the LSA.

This aspect of the intervention produced a number of positive outcomes. The combination of individual and group sessions were stated to be a success factor of the BeweegKuur, and group consultations were found to produce an equal or greater motivation to change exercise and dietary behaviors as individual consultations (Helmink, van Boekel, & Kremers, 2010b; van der Sluis, 2010). Furthermore, patients who participated in group sessions were, in general, satisfied with them (Helmink, van Boekel, et al., 2010b, p. 3). According to HCPs, the group sessions allowed participants to share their experiences in the BeweegKuur as well as brainstorm solutions together, but also to overcome some of their apprehensions about exercising: “I heard patients at a group meeting say that they didn't feel like it at first. They had to go to work in such a physiotherapy practice with all of those devices. At first they didn't like that. But they came into contact with people with the same problems and conditions as they. People who were otherwise very different from each other, eventually moved together and after swimming with the physiotherapist, for example, went swimming together. (Marx, 2009, p. 41; van der Sluis, 2010). However, a study of the implementation of the intervention also revealed that attendance of the group meetings was low (Barte, Hendriks, Rutten, Veenhof, & Bemelmans, 2014).

### **Sample of the consultation exercise**

Of the more than fifty stakeholders who were contacted, eight agreed to be interviewed. All were Dutch women, and they represented four out of eight stakeholder groups. Particularly missing were more HCPs and patient interest groups. Three of the interviewees were researchers having written a PhD thesis on the BeweegKuur and two were fat liberation activists. The remaining three were, respectively, a project leader at Huis voor

Beweging (the current owner of the BeweegKuur), an assessment coordinator at the RIVM, and a lifestyle advisor administering the intervention. One of the researchers was also an employee at the Kenniscentrum Sport en Bewegen (formerly the National Instituut voor Sport en Bewegen, or NISB) when the intervention was first developed and implemented from 2007 to 2011.

### **Thematic analysis of the consultation exercise**

In order to gather information about the knowledge gaps in the literature, the interviews had three main sections (the full interview guide can be found in Appendix 2). In the first, the interviewee's relation and contribution to the BeweegKuur as well as their understanding of it were discussed. Then followed a section about PAOs, including weight bias, and finally, the interview finished with a discussion about the meaning and consequences of the renewal of the intervention following its inclusion in health insurance.

A thematic analysis of the interviews revealed two main findings. The first is that most stakeholders were more aware of potential adverse outcomes than it seemed from the literature, where they were rarely mentioned. For example, one researcher, when asked about the existence of adverse outcomes of the BeweegKuur, simply answered, "Of course, it's part of the game!". Other researchers identified potential adverse outcomes which they had not mentioned in their research, either because they had come to learn of them since, or because they had not felt that this was relevant to write about. Moreover, the RIVM employee explained that, unless they are explicitly mentioned in the documents provided by the owners of an intervention, the assessment committee does not conduct an analysis of interventions' PAOs.

The second finding follows from the first, and consists of several PAOs, pertaining to the intervention's efficiency, adherence to its protocol, its accessibility, participants' discouragement, and weight bias. These PAOs and their underlying assumptions will be

described in the following section in terms of the challenge they pose to one or more of Kahrass et al.'s (2017) ethics principles.

### **Inefficiency of the dietary guidance**

One of the PAOs the addressed was the inefficiency of the diet component of the BeweegKuur: most participants did not change their diet behavior during the course of the intervention. This had already been pointed out in the literature, where it was explained as being due to participants attending few consultations with the dietician (Barte et al., 2014). This can be considered a challenge to the principle of efficiency of the intervention, because the outputs deployed to achieve the goals of the intervention are not producing the desired results.

However, the interviews allowed to issue to also be viewed as a challenge to the principle of non-maleficence. One researcher observed that participants felt patronized by dieticians: "Often the feeling is created that the dietician knows better and that they tell you what to do." Such behavior on behalf of dieticians might rely on the following assumption, "If [the participants] are more active and they don't lose weight, then you know that there is something wrong with the food," as one researcher put it. This leads to the belief that, if a participant is overweight, they must not have a healthy diet. However, as one activist explained, "We gather as fat people and we've basically tried it all." Thus, this assumption creates the lack of efficiency of the intervention, as well as potential harm to its participants, which one activist summarized as, "Meeting with people like dieticians or doctors who think that they can just fix that, that's just so arrogant. And so inconsiderate of the person that's actually in front of you."

### **Lack of adherence to the protocol**

The next PAO was also already noted in the literature: it was found that participants of the two more intensive versions of the BeweegKuur did not attend the number of prescribed consultations during the first three months because they were overwhelmed by

the amount of guidance they were receiving (Berendsen, 2016). The interviews allowed to further analyze this as being a challenge to the principle of autonomy, as it results largely from forcing participants to arrange their lives around the requirements of the intervention for a relatively long period of time. “Some people can’t and just won’t plan their life for two years,” the HvB employee explained. One activist further described the issue: “Everything is suddenly about getting fit. It’s not that important. (laugh). I think a thing should be available for people to pick out of caring for them, and not like, shoved into their faces um, with the story that this is because we care, but it’s more like control your body.”

With this explanation, she also points out that this challenge stems from an approach to the intervention that privileges control of the participants. Although the BeweegKuur is in principle open to a bottom-up approach, through the setting of personal goals and the use of MI, one researcher remarked that: “It’s an approach that was really top-down, I think. Privilege comes with responsibility. First to change yourself. And then help others. On their terms.” This attitude is not unique to the BeweegKuur: “They like to talk about us, but not with us,” said one of the fat activists about healthcare in general. This attitude is at least partly brought about by the common assumption that overweight and obesity are diseases which can – and must – be treated: “[There is a] DSM diagnosis, and it’s an official disease [...]. So people can be treated for that, not only by a dietician, but also by a psychologist or the social worker to solve problems, because problems with eating start because of something else.” Also coming into play might be the belief that weight loss is a universal goal: “I think if you ask on the street, most of the people say yeah, well, I want to lose weight.” However, this is not necessarily the case: “I wouldn’t just change my body for any other body. So, if you would ask me, would you want to be thin, I would have to think about that, because it’s also me, and it’s also you know, this body carried me throughout my life so I wouldn’t just throw that away.”



## **Inaccessibility of the intervention**

The LSA who was interviewed worked in a diverse neighborhood, many inhabitants of which were migrants from non-Western countries. She had experience working with the BeweegKuur in both 2009 and 2019, and noticed that both versions lacked accessibility for non-Dutch speaking participants, as well as participants with different cultural backgrounds. She explained that, in order for these participants to be able to take part fully and independently in the BeweegKuur, she had to adapt diet advice to their cooking habits, as well as translate materials such as the logbook to different languages. If this was not done, participants from migrant backgrounds might be excluded from the intervention. According to her, this was a problem because, “The BeweegKuur may be better for the people who don’t speak Dutch very well and have a lower income, I think they have a greater gain if they follow the BeweegKuur than people who speak good Dutch, and know how to find their way in Holland, in the city.”

This potential PAO is a challenge to the principle of justice, as it stops certain sub-populations from accessing the intervention. Moreover, although the concrete example given by the LSA from her experience concerned lack of accessibility due to the culture, there are other related issues. “They don’t see the broader picture of someone’s health in a big way... in a cultural, societal, financial, how you grew up, what your genes are... that is not part of the kuur, the BeweegKuur,” explained an activist. Several interviewees noted that accessibility would be improved now that the intervention is covered by basic health insurance, as financing would no longer be a barrier for low SES participants. However, according to the other activist, the issue of accessibility is more generally tied to the design of one-size-fits-all interventions: “That’s also something that I think is very tricky with stuff like this. That it’s in the hand of the other, and it doesn’t have anything to do with who you are, what your character is like, what your goals in life are, what your life is like... And your life is suddenly in the hands of professionals.” Thus, lack of accessibility is not only due to

the absence of materials in different languages, but also to the assumption that everyone leads the same life, which can be molded into a healthier version of itself.

### **Discouragement**

Another PAO described by several interviewees was discouragement due to perceived inefficacy of the intervention. “If you look at weight loss, it’s so dependent on a lot of other things as well: stress, and sleep, and genetics,... And also the composition of your weight might change. [...] Then of course it’s very demotivating if your goal is to have 2 kg weight loss and you get to the practice nurse and you haven’t reached that even though you’ve eaten healthier and you’ve been more active, and then your actual goal, so weight loss, hasn’t been reached,” one researcher explained.

This constitutes a challenge to the principle of efficiency of the intervention. The interviews showed that it stems from the goals of the intervention, and the assumptions that underlie them: at first, all the researchers and the LSA named increase PA in everyday life as the main goal of the BeweegKuur. However, when asked further about the 5% weight reduction goal in the protocol, they all admitted that this was also a main desired outcome. The HvB employee explained that this was a practical choice, “That’s still the goal I think, but the goal is formulated also to make it measurable to do research.” Yet, the LSA thought that this was because weight loss necessarily followed from lifestyle changes, “If they really, really were motivated they exercised, they followed the PA advice, they always lost weight,” she said of her clients. Hence, participants are more likely to be discouraged, as this assumption frames the inability to lose weight as a lack of motivation, or as a sign of another issue. This, in turn, prevents professionals from changing their methods to increase efficiency and effectiveness as they do not consider there to be a problem with the intervention itself.

## **Weight bias**

The topic of weight bias was discussed in all interviews, which produced a number of diverse responses. Although some interviewees did not think it would be an issue, other recognized it as a PAO: “We all – also professionals – we relate all kinds of characteristics to people who are overweight: they are lazy, they don’t have any discipline, they are less successful, all those kinds of negative characteristics.” It is known that weight bias can have physical and psychological consequences, but also engender other issues such as healthcare avoidance: “[Healthcare] comes with this discourse of bodies that I feel is very normative and binary, and so it also has to do with my gender issues that I just don’t trust doctors and the medical world. From experience,” explained one activist. Consequently, the potential of weight bias in the BeweegKuur poses a challenge to the principle of non-maleficence.

It is hard to pinpoint where weight bias stems from, as, like it was pointed out by several interviewees, weight bias is prevalent in Dutch society. However, it can be said that it is enhanced by several factors. For example, the intervention’s goal of a 5% weight decrease, which frames weight loss as a pre-requisite for improved health and spreads the belief that fat people are necessarily unhealthy, but also that they are not trying hard enough: “People – also some people with good intentions – but people blame me for not taking care myself, because they think they can tell by looking at me.” The lack of awareness about weight bias in healthcare and its consequences plays a role, too. When weight bias was mentioned in the interview, the most common response was to ask to repeat the question or to define weight bias, or silence. Some of the interviewees then argued that the intervention would decrease weight stigma, by making weight a more open subject. On the other hand, an activist countered, the BeweegKuur and other CLIs could also legitimize weight bias in Dutch society. Therefore, the intervention’s potential in propagating weight bias outside the intervention was identified as a PAO along with the issue of weight bias within the BeweegKuur.

## Discussion and conclusion

Through a scoping review on the topic of the BeweegKuur, a Dutch CLI for overweight and obesity, this research aimed to assess the extent to which PAOs are considered and reflected on by stakeholders. The review of the literature revealed two overarching assumptions and two theories which underlie the general vision and mission of the BeweegKuur. The theories, Self-Determination Theory and Motivational Interviewing, place emphasis on the autonomy of participants and on HCPs' role of transmitting knowledge to them. Meanwhile, the overarching assumptions entail the construction of overweight and obesity as a public health issue which must be addressed, and how this should be done by changing individuals' behaviors. These overarching assumptions and theories shaped the design and outputs of the intervention, but also further produced four more specific assumptions concerning multidisciplinary, self-management, the integration of care and sports, and group guidance.

A Theory of Change approach analysis showed that the underlying assumptions and theories of the BweegKuur produced a series of outputs, which in turn resulted in some positive outcomes. For example, improved HCP cooperation (Ekelmans, 2011), increased autonomous motivation to engage in PA (Rutten et al., 2014), the spread of social maps (Wagemakers et al., 2011), and group identification between participants were realized (van der Sluis, 2010). However, some intended outcomes also failed to materialize. For example, changes in diet behavior (Rutten et al., 2014), the sustained updating of social maps (Leemrijse et al., 2013), and high attendance of all prescribed guidance (Berendsen, 2016). Although the literature touched upon the lack of realization of certain intended outcomes, it did not address the matter of unintended outcomes. This finding shows that there is indeed a lack of written discourse around the BeweegKuur concerning its ethical implications and PAOs, which is in line with Rich and Evan's (2005) assessment that public health discourse tends to focus on the purely medical and sometimes economic aspects of obesity, its prevention, and its treatment.

To address this knowledge gap in the written discourse, an ethical analysis, based on Kahrass et al.'s (2017) principlism framework, was applied to the content of the stakeholder consultation. The interviews were semi-structured, thus not identical to one another, but all addressed PAOs of the intervention, their underlying assumptions, and the consequences of the interventions' insurance coverage. Their analysis revealed previously unaddressed assumptions about the *raison d'être* of the BeweegKuur, aspects of its designs, and diverse PAOs. Some important PAOs found were the inefficiency of the dietary guidance, the discouragement faced by participants unable to lose weight, and the weight bias present in the BeweegKuur. They reflected a challenge to Kahrass et al.'s (2017) principles of non-maleficence and efficiency of the intervention. Furthermore, lack of accessibility to the intervention for cultural, lingual, and socio-economic reasons constituted a challenge to the principle of justice, and lack of adherence to the intervention protocol was found to be a consequence of a challenge to the principle of autonomy. No PAOs reflecting a challenge to the principles of beneficence and of legitimacy of the decision-making authorities were addressed in the interviews. However, the absence of mainstream discussion about the ethical aspect of obesity treatment and prevention was recognized by several stakeholders. By addressing a number of PAOs which were not mentioned in the publications, the interviews also showed that, even if they do not write about them, most stakeholders have a certain degree of awareness about the ethical implications of the BeweegKuur. This sets the agenda for further research to focus on better understanding why this gap between personal awareness and professional writing exists.

### **Limitations and recommendations for further research**

The main limitation of this research is that it was limited to the study of a single intervention. This restricts the ability to replicate the findings or generalize the conclusions to apply them to other situations. However, the limited scope of the study is also one of its biggest strengths, as it allowed an in-depth look at the different assumptions and outcomes of the BeweegKuur and how exactly they were linked to each other. A further limitation of

this research is that it was conducted by only one reader. Finally, it lacks the representation of all stakeholder categories in the stakeholder consultation, making it vulnerable to selection bias. For these reasons, it is recommended that further research be conducted to gather more diverse stakeholder insights into the PAOs of the intervention in a qualitative manner. Investigation into why ethical aspects and undesired outcomes of obesity prevention and treatment are rarely discussed is also warranted.

## **Conclusions**

The scoping review revealed a contrast between the stakeholders' personal awareness of the PAOs of the BeweegKuur, reflected in the interviews, and the lack of mention of PAOs in the publications about the intervention. Indeed, although stakeholders, when prompted, are often able to name several PAOs of the BeweegKuur, their ethical implications, and some of the assumptions that underlie them, these issues do not appear in the written discourse on the subject.

These findings suggest a number of recommendations for research and practice, which in this case are narrowly tied. PAOs and ethical implications of interventions should always be engaged with in publications, as they always exist and because institutions evaluating interventions cannot assess information they do not have. What's more stakeholders must continually reflect on and report the assumptions underlying interventions, as they largely determine the outputs and outcomes of the intervention, and are therefore, to a certain extent, at the root of all PAOs. These are important steps to take because, if most professionals are, like the interviewees, aware of some PAOs, but unwilling or indifferent to writing about them in their publications, it is unlikely then that they will ever be examined. Therefore, this thesis ends with a direct call to public health professionals to take these recommendations into account, and to start reflecting more critically on their practices, individually and collectively. Only then can a more open and constructive dialogue be created around the ethical implications of interventions for overweight and obesity.

## Reference list

- Aphramor, L. (2005). Is A Weight-Centred Health Framework Salutogenic? Some Thoughts on Unhinging Certain Dietary Ideologies. *Social Theory & Health*, 3(4), 315-340. doi:10.1057/palgrave.sth.8700059
- Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19-32. doi:10.1080/1364557032000119616
- Ball, K., & Crawford, D. (2006). Socio-economic factors in obesity: A case of slim chance in a fat world? *Asia Pacific Journal of Clinical Nutrition*, 15(SUPPL. 1), 15-20.
- Barte, J. C., Hendriks, M. R., Rutten, G., Veenhof, C., & Bemelmans, W. J. (2014). Implementation of the 'BeweegKuur' in practice: utilization of care of a lifestyle intervention in the Netherlands. *International Journal of Health Promotion Education*, 52(4), 222-228.
- Beauchamp, T. L., & Childress, J. F. (1979). *Principles of biomedical ethics*. New York: Oxford University Press.
- Berendsen, B. (2016). *Measurement and promotion of physical activity: evaluation of activity monitors and a multidisciplinary lifestyle intervention in primary care*. (Doctoral Thesis), Universiteit Maastricht, Maastricht, the Netherlands.
- Bolt, C., & de Kort, M. (2011). *BeweegKuur, een kansrijke verbinding van zorg en sport*. Ede: NISB.
- Bouffard, M., & Reid, G. (2012). The Good, the Bad, and the Ugly of Evidence-Based Practice1. *Adapted Physical Activity Quarterly*, 29(1), 1-24. doi:10.1123/apaq.29.1.1
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi:10.1191/1478088706qp063oa
- Breuer, E., Lee, L., De Silva, M., & Lund, C. J. I. S. (2016). Using theory of change to design and evaluate public health interventions: a systematic review. *11(1)*, 63. doi:10.1186/s13012-016-0422-6
- Callahan, D. (2013). Obesity: Chasing an Elusive Epidemic. *Hastings Center Report*, 43(1), 34-40. doi:10.1002/hast.114
- Chandaria, S. A. (2014). The Emerging Paradigm Shift in Understanding the Causes of Obesity. In *Controversies in Obesity* (pp. 63-73): Springer.
- Courtwright, A. (2013). Stigmatization and Public Health Ethics. *Bioethics*, 27(2), 74-80. doi:10.1111/j.1467-8519.2011.01904.x
- de Vries, J. (2007). The obesity epidemic: medical and ethical considerations. *Science and Engineering Ethics*, 13(1), 55-67. doi:10.1007/s11948-007-9002-0
- den Hartog-van den Esker, F., Wagemakers, A., Vaandrager, L., & Koelen, M. (2012). *Een gedeelde passie voor gezonder leven. Evaluatieonderzoek naar netwerken rondom de beweegkuur en gecombineerde leefstijl interventies*. Retrieved from Wageningen:
- Ekelmans, N. (2011, December 2011). De BeweegKuur: grote omslag vlak voor de finish. *EADV Magazine*.
- Flegal, K. M., Kit, B. K., Orpana, H., & Graubard, B. I. (2013). Association of All-Cause Mortality With Overweight and Obesity Using Standard Body Mass Index Categories: A Systematic Review and Meta-analysis. *Journal of the American Medical Association*, 309(1), 71-82. doi:10.1001/jama.2012.113905

- Foucault, M., & Droit, R. P. (2004). *Michel Foucault: entretiens*: Odile Jacob.
- Franz, M. J., VanWormer, J. J., Crain, A. L., Boucher, J. L., Histon, T., Caplan, W., . . . Pronk, N. P. (2007). Weight-Loss Outcomes: A Systematic Review and Meta-Analysis of Weight-Loss Clinical Trials with a Minimum 1-Year Follow-Up. *Journal of the American Dietetic Association*, *107*(10), 1755-1767. doi:<https://doi.org/10.1016/j.jada.2007.07.017>
- Gilman, S. L. (2008). *Fat: A Cultural History of Obesity*: Wiley.
- Guh, D. P., Zhang, W., Bansback, N., Amarsi, Z., Birmingham, C. L., & Anis, A. H. (2009). The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC public health*, *9*(1), 88.
- Helminck, J. (2012). *Ready set go?: a study of the development and implementation process of the BeweegKuur*. (Doctoral thesis), Maastricht University,
- Helminck, J., Meis, J., & Kremers, S. P. J. (2010). *Een jaar BeweegKuur, en dan? Een onderzoek naar de bevorderende en belemmerende contextuele factoren*. Retrieved from [https://cris.maastrichtuniversity.nl/portal/en/publications/een-jaar-beweegkuur-en-dan-een-onderzoek-naar-de-bevorderende-en-belemmerende-contextuele-factoren\(4c294b2a-ca62-4db8-b47f-2d45c2633ef8\).html](https://cris.maastrichtuniversity.nl/portal/en/publications/een-jaar-beweegkuur-en-dan-een-onderzoek-naar-de-bevorderende-en-belemmerende-contextuele-factoren(4c294b2a-ca62-4db8-b47f-2d45c2633ef8).html)
- Helminck, J., Raaijmakers, L., Rutten, G., Kremers, S., & de Vries, N. (2013). Gecombineerde leefstijl interventies in Nederland: ervaringen uit de BeweegKuur. *Tijdschrift voor gezondheidswetenschappen*, *91*, 88-90.
- Helminck, J., van Boekel, L., & Kremers, S. (2010a). *Doorontwikkeling van de BeweegKuur voor Overgewicht & Obesitas*: Maastricht University.
- Helminck, J., van Boekel, L., & Kremers, S. (2010b). *Pilot BeweegKuur overgewicht & obesitas. Resultaten van een follow-up meting onder deelnemers*.
- Helminck, J., Van Boekel, L. C., der Sluis, M. E., & Kremers, S. P. J. (2011). *Lange termijn evaluatie onder deelnemers aan de BeweegKuur: Rapportage van de resultaten van een follow-up meting bij deelnemers*.
- Himmelstein, M. S., & Puhl, R. M. (2019). Weight-based victimization from friends and family: implications for how adolescents cope with weight stigma. *Pediatric obesity*, *14*(1), e12453. doi:10.1111/ijpo.12453
- Himmelstein, M. S., Puhl, R. M., & Quinn, D. M. (2018). Weight Stigma and Health: The Mediating Role of Coping Responses. *Health Psychology*, *37*(2), 139-147. doi:10.1037/hea0000575
- Jain, A. (2005). Treating obesity in individuals and populations. *BMJ*, *331*(7529), 1387-1390. doi:10.1136/bmj.331.7529.1387
- Jones, N., Furlanetto, D. L. C., Jackson, J. A., & Kinn, S. (2007). An investigation of obese adults' views of the outcomes of dietary treatment. *Journal of Human Nutrition and Dietetics*, *20*(5), 486-494. doi:10.1111/j.1365-277X.2007.00810.x
- Kahrass, H., Strech, D., & Mertz, M. (2017). Ethical issues in obesity prevention for school children: a systematic qualitative review. *International Journal of Public Health*, *62*(9), 981-988. doi:10.1007/s00038-017-1027-9
- Kass, N., Hecht, K., Paul, A., & Birnbach, K. (2014). Ethics and Obesity Prevention: Ethical Considerations in 3 Approaches to Reducing Consumption of Sugar-Sweetened Beverages. *American Journal of Public Health*, *104*(5), 787-795. doi:10.2105/ajph.2013.301708
- Keith, S. W., Redden, D. T., Katzmarzyk, P. T., Boggiano, M. M., Hanlon, E. C., Benca, R. M., . . . Allison, D. B. (2006). Putative contributors to the secular increase in obesity: exploring the



- roads less traveled. *International Journal of Obesity*, 30(11), 1585-1594. doi:10.1038/sj.ijo.0803326
- Kolotkin, R. L., & Andersen, J. R. (2017). A systematic review of reviews: exploring the relationship between obesity, weight loss and health-related quality of life. *Clinical Obesity*, 7(5), 273-289. doi:10.1111/cob.12203
- Kyle, T. K., Dhurandhar, E. J., & Allison, D. B. (2016). Regarding Obesity as a Disease: Evolving Policies and Their Implications. *Endocrinology and Metabolism Clinics*, 45(3), 511-520. doi:10.1016/j.ecl.2016.04.004
- Lassche, K., Preller, L., & Rutten, G. (2015). *De BeweegKuur: ervaringen en aanbevelingen voor de toekomst*. NISB.
- Leemrijse, C. J., Veenhof, C., & de Bakker, D. (2013). *Zorg en sport bewegen in de buurt*: Nivel.
- Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: advancing the methodology. *Implementation Science*, 5(1), 69. doi:10.1186/1748-5908-5-69
- Linmans, J. J., Spigt, M. G., Deneer, L., Lucas, A. E., de Bakker, M., Gidding, L. G., . . . Knottnerus, J. A. (2011). Effect of lifestyle intervention for people with diabetes or prediabetes in real-world primary care: propensity score analysis. *BMC Family Practice*, 12(1), 95. doi:10.1186/1471-2296-12-95
- Mansfield, L., & Rich, E. (2013). Public health pedagogy, border crossings and physical activity at every size. *Critical Public Health*, 23(3), 356-370. doi:10.1080/09581596.2013.783685
- Marckmann, G., Schmidt, H., Sofaer, N., & Strech, D. (2015). Putting Public Health Ethics into Practice: A Systematic Framework. *Frontiers in Public Health*, 3(23). doi:10.3389/fpubh.2015.00023
- Marx, E. (2009, November 2009). Recept voor een beter leven: BeweegKuur in basispakket vanaf 2011. *Diabc*.
- McPhail, D. (2013). Resisting biopedagogies of obesity in a problem population: understandings of healthy eating and healthy weight in a Newfoundland and Labrador community. *Critical Public Health*, 23(3), 289-303. doi:10.1080/09581596.2013.797566
- Ministerie van Volksgezondheid Welzijn en Sport. (2011). *Gezondheid Dichtbij: landelijke nota gezondheidsbeleid*. Den Haag: MVWS.
- Nederlands Instituut voor Sport en Bewegen (NISB). (2011). *Visiedocument zelfmanagementondersteuning in de BeweegKuur*. Ede: NISB.
- OECD/EU. (2016). *Health at a Glance: Europe 2016 – State of Health in the EU Cycle*. Paris: OECD Publishing.
- Phelan, S. M., Burgess, D. J., Yeazel, M. W., Hellerstedt, W. L., Griffin, J. M., & van Ryn, M. (2015). Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obesity Reviews*, 16(4), 319-326. doi:10.1111/obr.12266
- Puhl, R. M., & Brownell, K. D. (2006). Confronting and Coping with Weight Stigma: An Investigation of Overweight and Obese Adults. *Obesity*, 14(10), 1802-1815. doi:10.1038/oby.2006.208
- Raaijmakers, L., Helmink, J., Hamers, F., & Kremers, S. (2013). *Implementatie en continuering van de beweegkuur: monitorstudie onder zorgverleners najaar 2011*. Maastricht: Maastricht University.
- Rich, E., & Evans, J. (2005). 'Fat Ethics' – The Obesity Discourse and Body Politics. *Social Theory & Health*, 3(4), 341-358. doi:10.1057/palgrave.sth.8700057

- Rutten, G. M., Meis, J. J., Hendriks, M. R., Hamers, F. J., Veenhof, C., & Kremers, S. P. (2014). The contribution of lifestyle coaching of overweight patients in primary care to more autonomous motivation for physical activity and healthy dietary behaviour: results of a longitudinal study. *International Journal of Behavior, Nutrition, and Physical Activity*, *11*, 86. doi:10.1186/s12966-014-0086-z
- Schutte, B. A., Haveman-Nies, A., & Preller, L. (2015). One-year results of the BeweegKuur lifestyle intervention implemented in Dutch primary healthcare settings. *BioMed research international*, 2015.
- Schwartz, M. B., Chambliss, H. O., Brownell, K. D., Blair, S. N., & Billington, C. (2003). Weight bias among health professionals specializing in obesity. *Obesity Research*, *11*(9), 1033-1039. doi:DOI 10.1038/oby.2003.142
- ten Have, M. (2014). Ethical aspects of obesity prevention. *Best Practice & Research Clinical Gastroenterology*, *28*(2), 303-314. doi:<https://doi.org/10.1016/j.bpg.2014.03.004>
- Tomiya, A. J. (2014). Weight stigma is stressful. A review of evidence for the Cyclic Obesity/Weight-Based Stigma model. *Appetite*, *82*, 8-15. doi:<https://doi.org/10.1016/j.appet.2014.06.108>
- van Amsterdam, N. (2013). Big fat inequalities, thin privilege: An intersectional perspective on 'body size'. *European Journal of Women's Studies*, *20*(2), 155-169. doi:10.1177/1350506812456461
- van Amsterdam, N., & Knoppers, A. (2017). Healthy habits are no fun: How Dutch youth negotiate discourses about food, fit, fat, and fun. *Health*, *22*(2), 128-146. doi:10.1177/1363459316688517
- van Ballegoie, E., & Aalbers, M. (2010). De BeweegKuur is volop in beweging. *Tijdschrift voor praktijkondersteuning*, *5*(6), 173-177.
- van der Sluis, M. E., Haan, C. de, & Jonkers, R. (2010). *Beweegkuur: groepsbijeenkomsten met de leefstijladviseur, een verkennend onderzoek*. Amsterdam: ResCon.
- Vartanian, L. R., & Smyth, J. M. (2013). Primum Non Nocere: Obesity Stigma and Public Health. *Journal of Bioethical Inquiry*, *10*(1), 49-57. doi:10.1007/s11673-012-9412-9
- Visser, F., & Plantinga, M. (2009). *Procesevaluatie professionals 2009 BeweegKuur*. Retrieved from <https://www.kennisbanksportenbewegen.nl/?file=9127&m=1538047711&action=file.download>
- Vries, S. d., Langers, F., Meis, J., Berendsen, B., & Kremers, S. (2016). *Blijven Bewegen na de BeweegKuur : de rol van groen in de woonomgeving*. In Alterra-rapport, 1566-7197 ; 2701. Retrieved from <http://edepot.wur.nl/370768>
- Wagemaker, Y. (2018). *Werkblad Beschrijving Intervention: BeweegKuur Gecombineerde Leefstijlinterventie (GLI)*. Elst: Huis voor Beweging.
- Wagemakers, A., den Hartog-van den Esker, F., & Vaandrager, L. (2011). *Van vonkjes naar vuurtjes. Pilot evaluatie netwerkvorming rondom de BeweegKuur*. Wageningen: Wageningen UR.
- ZonMW. (2014). *Subsidieronde / subsidy round: monitoringonderzoek naar pakket 1 en 2 BeweegKuur, eindverslagformulier*.

### Appendix 1: Data collection table, in chronological order

Full reference	Research question	Study design	Sample and recruitment	Main outcome(s)
Bemelmans, W., Wendel-Vos, G., Bogers, R., Milder, I., De Hollander, E., Barte, J., . . . Jacobs-van der Bruggen, M. (2008). Kosteneffectiviteit bewegen en dieetadvies bij mensen met (hoog risico op) diabetes mellitus type 2. Literatuuronderzoek en modelsimulaties rondom de Beweegkuur (260401005). Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu.	What is the optimal form of lifestyle counseling concerning diet and physical activity in the care sector? What are the health gains and cost-effectivity from the national introduction of different lifestyle counseling packages?	Literature review and model simulations.	NA	Expanding lifestyle counseling up to 400,- p.p. in the first year will be cost-effective compared to a proxy for existing basic insurance package (the GOAL program). This was based on a literature review on trials of existing interventions.
Helmink, J. H. M., Cox, V.C.M., & Kremers, S.P.J. (2009). Implementatie van de BeweegKuur: een pilot studie, pilotperiode april-december 2008. Maastricht: Maastricht University.	Is the BK practically feasible in terms of form, content, and support? How do BK participants/HCPs value the guidance and what is its perceived effectiveness on PA behavior? What are the success and failure factors of implementation experienced by the HCPs? In what ways could the BK be improved? What recommendations could be made to improve the dissemination and implementation of the BK?	Interviews, questionnaires, and registration forms	3 patients and 9 HCPs having participated in similar interventions were interviewed before the start of the BK. 21 HCPs were interviewed about success and failure factors at different times. Questionnaires were given to patients by the LSA at t0 (n=261) and t1 (3 months in, n=126). Questionnaires for HCPs were given at t0 and t1 (6 months in). 76 HCPs filled both out. 494 patient registration forms were filled out and returned.	Motivation was high amongst participants and HCPs (maybe due to self-selection). GP visit at the start is an important motivator.

<p>Visser, F., &amp; Plantinga, M. (2009). Procevaluatie professionals 2009 BeweegKuur. Retrieved from <a href="https://www.kennisbanksportenbewegen.nl/?file=9127&amp;m=1538047711&amp;action=file.download">https://www.kennisbanksportenbewegen.nl/?file=9127&amp;m=1538047711&amp;action=file.download</a></p>	<p>Which factors influence the success or failure of the BeweegKuur according to HCPs working within the intervention?</p>	<p>Questionnaires.</p>	<p>Online questionnaires were sent to HCPs involved in the BK through the ROS networks. HCPs included were: LSAs (n=39), physiotherapists (n=37), GPs (n=28), dieticians (n=31), and nurse practitioners (n=17).</p>	<p>Low response rates for physiotherapists (33%), GPs (17%), and nurse practitioners (33%). Increased cooperation between disciplines is the biggest facilitator, and time and administrative burdens are the biggest barriers. It was suggested to stop requiring intake ECGs and replace them with other screening devices, adapt the materials for participants of different cultural backgrounds, and widen the inclusion criteria.</p>
<p>Helmink, J., van Boekel, L., &amp; Kremers, S. (2010). Doorontwikkeling van de BeweegKuur voor Overgewicht &amp; Obesitas. Maastricht: Maastricht University.</p>	<p>What do participants and HCPs think is necessary in terms of materials? How does the prototype of the BeweegKuur for overweight work in practice and how do HCPs think it needs to be modified? What do the HCPs think the success and failure factors of the prototype are?</p>	<p>Mixed methods evaluation: registration forms, questionnaires, interviews, and focus groups.</p>	<p>Participants were given the questionnaire at their intake appointment. (n=36) Participants were given a questionnaire by dieticians at the end of the nutrition information session. (n=52) Dieticians were also given a questionnaire then. (n=2) Focus groups were organized at 3 pilot locations. Interviews were conducted with HCPs at 5 pilot locations (n=15)</p>	<p>The protocol and inclusion criteria need to be better defined/re-defined. There should be more documentation from the NISB, including a sample contract to keep participants from quitting on a whim. All participants should do a physical abilities test at the start. More documentation and adjustments should be in place for "allochtones". There are two main barriers to implementation: lack of time and lack of insurance coverage for individual sessions with the dietician.</p>
<p>Helmink, J., van Boekel, L., &amp; Kremers, S. (2010b). Implementatie van de BeweegKuur in de regio. Evaluatie onder ROS-adviseurs. Maastricht: Maastricht University.</p>	<p>The purpose of the current research is to evaluate the work and the opinion of ROS advisors with regard to the BeweegKuur in 2010.</p>	<p>Questionnaire.</p>	<p>All 44 ROS advisors were sent the questionnaire. (n=32)</p>	<p>There is a need for better communication between the ROS and the NISB and the ROS and the healthcare centers. A bigger budget is also needed as building networks and setting up new locations is more expensive than was expected. Responsibility for the social map must be divided better.</p>
<p>Helmink, J., van Boekel, L., &amp; Kremers, S. (2010c). Pilot BeweegKuur overgewicht &amp; obesitas. Resultaten van een follow-up meting onder deelnemers. Maastricht: Maastricht University</p>	<p>What do participants and HCPs think is necessary in terms of materials? How does the prototype of the BeweegKuur for overweight work in practice</p>	<p>Questionnaires.</p>	<p>A similar questionnaire than was given at the intake appointment at t0 (n=36) was given again to participants by LSAs three months later at t1 (n=27).</p>	<p>A significant decrease in BMI was observed for the participants who filled in both questionnaires (n=16). Overall, participants were satisfied by the intervention and felt fitter and healthier. The combination of group and individual dietician consultations were a facilitating factor, although the</p>

	and how do HCPs think it needs to be modified? What do the HCPs think the success and failure factors of the prototype are?			own cost of individual sessions was sometimes a barrier to participation.
Helminck, J. H. M., Meis, J., & Kremers, S. P. J. (2010). Een jaar BeweegKuur, en dan? Een onderzoek naar de bevorderende en belemmerende contextuele factoren. Retrieved from <a href="https://cris.maastrichtuniversity.nl/portal/en/publications/een-jaar-beweegkuur-en-dan-een-onderzoek-naar-de-bevorderende-en-belemmerende-contextuele-factoren(4c294b2a-ca62-4db8-b47f-2d45c2633ef8).html">https://cris.maastrichtuniversity.nl/portal/en/publications/een-jaar-beweegkuur-en-dan-een-onderzoek-naar-de-bevorderende-en-belemmerende-contextuele-factoren(4c294b2a-ca62-4db8-b47f-2d45c2633ef8).html</a>	Is the BK practically feasible in terms of form, content, and support? How do BK participants/HCPs value the guidance and what is its perceived effectiveness on PA behavior? What are the success and failure factors of implementation experienced by the HCPs? In what ways could the BK be improved? What recommendations could be made to improve the dissemination and implementation of the BK?	Questionnaires, registration form, evaluation meetings, and interviews.	Participants were given questionnaires by LSAs at t0 (n=375), t1 (3 mo., n=211), t2 (12 mo., n=84). Registration forms for patients having started in 2008. (n=656). Participants quitting the BK were given questionnaires. (n=16). ROS advisors were interviewed during the 2 <sup>nd</sup> pilot year. (n=7). An ROS evaluation meeting was used. External party interviews were undertaken in Oct. 2009. (n=8).	ROS advisors were enthusiastic and pleased with the intervention and the networks and cooperation it creates. But HCPs and participants are not always motivated, maybe because the intervention is too medicalized. The target group should be expanded and flow from care to sports should be improved. LSAs should be clear about the program and its goals from the start, as it affects long-term motivation and effectivity. The ROS should coordinate efforts to build the social map. The role of LSA should be attributed to whoever can do it best in each practice. The intake ECG is an unnecessary medicalization.
Landwehr, J. (2010). Wat beweegt mensen deel te nemen aan een leefstijlinterventie: Een onderzoek naar factoren die deelname aan de BeweegKuur beïnvloeden. (Arbeid, Zorg en Welzijn Master Thesis), Utrecht Universiteit, Utrecht.	Which factors determine participation in a lifestyle intervention?	Questionnaires.	13 practices were given 10 questionnaires for potential participants meeting the inclusion criteria for the intervention. Of the 130 questionnaires, half were for participants, and the other half for non-participants. In the end, 49 of the respondents were participants and 16 were non-participants. (n=65)	Reasons for participating were, in order: diabetes, weight loss, overall health, condition, professional support, "getting a foot in the door", changing diet. Reasons for <i>not</i> participating, in order: already active, no time, not necessary, not interested in group activities, no confidence, illness. Non-participants underestimate their level of health risk compared to participants, and participants overestimate potential health gains from the BK. Higher social support and education predicted a better assessment of health risks. No demographic factors influenced perception of expected outcomes.

				Social support, gender, and age affect choice to participate: more men choose not to participate, and most participants are between 60 and 70 years old.
van der Sluis, M. E., Haan, C. de, & Jonkers, R. (2010). Beweegkuur: groepsbijeenkomsten met de leefstijladviseur, een verkennend onderzoek. Amsterdam: ResCon.	Do the assumed positive effects of a group-oriented approach actually occur and does such an approach deserve to be followed in the further roll-out of the BeweegKuur?	Mixed methods design: questionnaires, phone interviews and focus group.	Participants from two practices with Joint Medical Consults were given questionnaires. (n=16) Phone interviews were held with LSAs from those practices. (n=2) A focus group was held with 3 of 5 participants from one of the practices.	Most participants were satisfied with the additional guidance that the group consultations provided. Group consultations produced an equal or greater motivation to change exercise and dietary behaviors as individual consultations. According to the LSAs, the group consultations worked well because the participants were able to motivate each other by exchanging experiences and coming up with solutions together. Groups should be composed of 7 to 10 participants, a clear division of time between the LSA and dietician be established, and meetings should last at least 30 minutes. Potential participants of the goal of group consultations should be informed that participants are able to give some direction on the subjects of conversations, so that private matters can be addressed in private meetings.
de Groot, M., & Lagendijk, E. (2011). NASB en BeweegKuur: met elkaar verbonden?, een analyse van de relatie tussen de netwerken van NASB en BeweegKuur. Amsterdam: DSP Groep.	What are the success and failure factors of local networks? How can the local BeweegKuur and NASB networks be used optimally and reinforce each other? How do municipalities use the NASB incentive scheme to distribute the BeweegKuur and embed it in policy?	Interviews.	12 municipalities of different sizes participating both in the BK and the NASB scheme were contacted. 2 to 4 interviews were conducted per municipality, usually with the municipality support worker for the project, the ROS contact person, and the BK LSA.	High satisfaction with the BK but bureaucracy, good ROS support, easier to establish networks in smaller municipalities and where sport and PA were already on the agenda, uncertainty about the future is a problem, and a psychological component is missing. What must be done: everyone must be in contact, feasible goals should be set, accessibility to sports should be increased, and GPs should become more involved.
Helminck, J. H. M., Van Boekel, L. C., der Sluis, M. E., & Kremers, S. P. J. (2011). Lange termijn evaluatie onder deelnemers aan de BeweegKuur:	What are the facilitating and impeding factors in terms of the outflow from the BeweegKuur, and what	Longitudinal study.	4 questionnaires were given to participants over 3 years. (n=129).	Most participants changed their PA behavior and maintained it. Eating behavior was all-or-nothing: either changed and maintained or not changed at all.

Rapportage van de resultaten van een follow-up meting bij deelnemers. Maastricht: Maastricht University.	personal and environmental factors predict motivation to maintain the recommended behaviors?			Only half of the participants went to a dietitian during the BK. Motivation decreased after the BK due to lack of support.
Schelven, W. v. (2011). Notitie 'Allochtonen in de BeweegKuur'. Ede: Nederlands Instituut voor Sport en Bewegen (NISB).	On which points are adjustments possible when setting up six experiments in the country? What causes immigrants to show different reaction patterns to certain parts of the BK than indigenous people? Which part of the immigrant population does not participate in the BK while they are, principle, eligible for it?	Discussion.	A group of stakeholders met in 2011 to discuss the inclusion of immigrants in the BeweegKuur.	It is hard to recruit, retain, and successfully transfer immigrants from BK to independent PA. Main recommendations: emphasize the aspects of PA that matter to the participants to increase motivation, add more group and community aspects to the intervention, tailor lifestyle advice to participants' cultures, translate the materials to other languages, inform participants about the intended goals and outcomes of the intervention, and diversify promotional materials to reach more diverse groups.
Ufkes, T. (2011). Rapport proef met ActiefMET in de BeweegKuur. Ede: Nederlands Instituut voor Sport en Bewegen (NISB).	Do participants feel more supported and stimulated during an exercise program when using ActiefMET instead of a paper logbook? Is the cooperation between professionals strengthened through the use of ActiefMET? Does ActiefMET provide support for BKIs in their accompaniment of participants and in their cooperation and communication with BK HCPs?	Questionnaires.	Questionnaires were given at 4 pilot locations to : participants (n=29), HCPs (n=8), and BKIs (n=3).	ActiefMet enabled all stakeholders to have a better overview of participants' PA behavior and helped participants maintain their new PA behavior. Most participants will keep using it. The digital aspect was not a barrier, but ActiefMet is not suitable for neighborhoods where most of the population is not "e-literate" (i.e. over 60 or first generation migrant background middle-aged women). ActiefMet supports participants' self-management. Mixed results on whether the system improves communication between the participants and the HCPs. The one BKI who worked with ActiefMet reported that it improved her communication with the participants and the HCPs. No evidence that ActiefMet supports participants better than a paper logbook or that it improves communication between HCPs.

<p>Wagemakers, A., den Hartog-van den Esker, F., &amp; Vaandrager, L. (2011). Van vonkjes naar vuurtjes. Pilot evaluatie netwerkvorming rondom de BeweegKuur. Wageningen: Wageningen Universiteit.</p>	<p>How are networks around the BK being formed, what are their success and failure factors, and what can be done to facilitate their creation and sustainability?</p>	<p>Document analysis, interviews, and focus groups.</p>	<p>Implementation plans and lessons plans about networks in the BK were analyzed. The heads of local and regional networks were interviewed. (n=12) Focus groups were held in 2 regional and 2 local networks.</p>	<p>Regional networks are usually composed of the ROS, GGD, and Sportraad. The role of the GGD isn't always clear. Potential partners include: municipalities, patient organizations, GP care groups, insurers, and the private sector. Such networks were already in place to some extent before the BK, and the networks' broader aim is to integrate prevention and CLIs in care. Important achievements at the regional level: cooperation, integration of prevention and care, social maps, the transparent communication structure, sufficient budget, and use of tools (network analysis and timeline method). Negative points: insecure funds, change in partners, and different visions. Local networks are composed of the LSA, physiotherapist, dietician, and nurse practitioner. The GP, municipality, and sports clubs are often included. Key achievements: participants' health gains, cooperation, quality care, social maps, ROS support, reduced prices in some sports clubs. Negative points: transition from care to sports, division of roles, broken up communication, lack of funding, participant recruitment difficulties, and the strict protocol.</p>
<p>Aldenkamp, R., &amp; Ufkes, T. (2012). Uitwerking interviews BeweegKuur-instructeur: project MBO-scholing. Ede: National Instituut Sport en Bewegen (NISB).</p>	<p>We wanted to know how BKIs perform their work after completing the BKI course, and how they experience the BeweegKuur in practice.</p>	<p>Interviews with BeweegKuur Instructeurs (BKIs).</p>	<p>22 BKIs from the BKI register were contacted. n = 11</p>	<p>The BKIs are enthusiastic and motivated and think they can play a big role in the BK. However, this is hard because they do not have a communication with the rest of the BK team and there is not a good flow between care and sports.</p>
<p>Blanson Henkemans, O., Otten, W., &amp; Spanjers, A. (2012). eCoach voor de Beweegkuur. De ontwikkeling van een persoonlijke computerassistent ter ondersteuning van een gezonde leefstijl. Leiden: TNO.</p>	<p>Which factors influence participation in the BeweegKuur and the subsequent independent maintenance of a healthy and active lifestyle?</p>	<p>Review of existing research on the BK, focus groups, questionnaire.</p>	<p>26 practices were called to participate in the research. 13 participants and 16 HCPs from 4 different practices participated in online and in-person focus groups.</p>	<p>8 pivotal factors: knowledge of own health and self-efficacy, motivation, confidence in ability to change behaviors and that this will improve health, implementation of knowledge into daily life, noticing improvements in health, social support, availability of</p>



	<p>Which strategies make use of these factors? How can the functions of the eCoach be used to facilitate these strategies?</p>		<p>156 HCPs filled out the questionnaire, which was part of Helmink's long-term monitoring study. 122 participants answered the questionnaire at a meeting for diabetic participants.</p>	<p>time and infrastructure in daily life, availability of skills and resources (both for HCPs and participants).</p>
<p>den Hartog-van den Esker, F., Wagemakers, A., Vaandrager, L., &amp; Koelen, M. (2012). Een gedeelde passie voor gezonder leven. Evaluatieonderzoek naar netwerken rondom de beweegkuur en gecombineerde leefstijl interventies. Wageningen: Wageningen University.</p>	<p>What results are achieved by the local and regional networks? Which factors contribute to the development and sustainability of networks? How can network development be facilitated at the local and regional levels?</p>	<p>Literature review, interviews, focus groups.</p>	<p>5 regional network coordinators and 16 local network coordinators were interviewed. Focus groups were held with each of the 5 regional networks, and 15 of the local networks.</p>	<p>The networks are successful, partners work together enthusiastically towards a common goal of enabling healthy lifestyles. Participants' health improved and patient-focused practice improved. A multidisciplinary network was created which enabled a good integration of first-line care and sports. Still, flow from care to sports is low, it is best facilitated by a warm, personal transfer, a subsidized offer, or support from the municipality or social workers. Facilitating factors for the creation of sustainable networks included: financial resources, personal contact, a common vision and identity, a good division of roles and tasks, support from the ROS.</p>
<p>van Dijk, M., &amp; Wigger, S. (2012). Van zorg naar sport en bewegen: interviews met zorgverleners en sportaanbieders over de doorstroom van BeweegKuur-deelnemers vanuit de eerstelijns gezondheidszorg naar het lokale sport- en beweegaanbod. Ede: National Instituut Sport en Beweegen (NISB).</p>	<p>What are success and failure factors of the connection between care and sports, and of the transition of BeweegKuur participants from care to local sports?</p>	<p>Semi-structured interviews with HCPs (n=18) from 7 BK practices and sports providers (n=25) who took part in the BK or similar interventions.</p>	<p>18 HCPs from 7 different practices participating in the BeweegKuur were interviewed, as well as 25 sports providers having worked with the BeweegKuur or similar interventions.</p>	<p>4 categories of bottlenecks (contact and communication, finances, quality, and time) and 6 categories of solutions (financing, connection/contact/network, communication, social map, stimulating healthy lifestyles, and expertise of the sports provider) were identified. Availability of funds was an issue everywhere, but otherwise each local situation had its own specific challenges.</p>
<p>Helmink, J. H. M. (2012). Ready set go?: a study of the development and implementation process of the BeweegKuur. (Doctoral thesis), Maastricht University.</p>	<p>What determines the the motivation of primary care professionals to implement and continue the BeweegKuur intervention?</p>	<p>In-depth interviews and questionnaires.</p>	<p>HCPs working in similar interventions were interviewed before the start of the intervention. (n=9).</p>	<p>On average, HCPs are 42.2 y.o. women working in a primary health care center, or a GP or physiotherapy practice. HCPs participating in the pilot are likely to be early innovators but they show high motivation. Short-term benefits for HCPs should be emphasized for motivation</p>

			Questionnaires were given to HCPs at the 18 pilot locations at t0 and t1 (6 months in).	as they value them more than long-term participant benefits.
What is the relationship between BMI, total sitting time and Total PA time in a generally overweight or obese population of diabetics or pre-diabetics, while controlling for demographic and psychosocial associates of the motivation to become more physically active by participating in a lifestyle intervention?	Questionnaire.		Questionnaire given to participants at intake. (n=361). The participants were, on average, 62 year old men with a BMI of 31.4. 60.6% of the participants were obese.	Sitting time was correlated with BMI more than total PA time. Motivation was also positively correlated with BMI.
Are cognitive profile, PA level, sitting time, weight status and demographics baseline predictors of the maintenance of intervention-induced changes in terms of PA and sitting time among diabetic and pre-diabetic patients?	Questionnaires.		Questionnaires were given to participants at t0 and t1 (2 years). (n=119).	PA time increased over two years. Participants who already had higher PA increased their sitting time, while those with lower PA at the start decreased their sitting time. Participants' socio-cognitive profile does not predict the effectivity of the BK.
What are the perceived promoting and impeding factors in the implementation of the BeweegKuur program for obese and overweight people.	Focus groups and interviews.		Participant focus groups were held at 3 pilot locations. (n=18). HCPs from pilot locations were interviewed individually. (n=15). A focus group was held with dieticians. (n=5).	Barriers to implementation: own cost of dietician and physiotherapist sessions, inconvenient meeting hours, and unclear goals and expectations. Implementation facilitators: multidisciplinary approach and combination of diet and PA.
What are the main	/	/	/	Implications for practice:

	findings of the studies, the methodological considerations, implications for practice and implications for further research.			A level of reinvention should be allowed without tipping into cherry-picking. Low intensity PA should also be promoted to prevent a sedentary lifestyle. MI training should be on-going. Expressed motivation at intake is not necessarily predictive of sustained motivation. Continuity of care should be ensured.
ter Haar, M., Verhoeven, P., & Aarts, N. (2012). Together for yourself. The development and implementation of a health-enhancing intervention within a network of organisations in a complex setting. Paper presented at the 19th Annual Conference on Multi-Organisational Partnerships, Alliances and Network, Wageningen, Netherlands.	How did the interaction process between the steering group members involved in BeweegKuur in the 2007-2011 period evolve? Which meanings emerged gradually about the BeweegKuur? What effect did this have on the development and dissemination of the BeweegKuur? And how can we understand these developments?	Case study: document analysis and interviews.	Documents concerning the BK from 2007 to 2011 were collected. (n=108) A group interview was held with key informers. (n=4) Semi-structured interviews were held with all steering group members. (n=11)	There were some conflicting views at the beginning between those who wanted a standardized approach grounded in theory and those who wanted a more customized approach that could be implemented quickly. The RIVM recommended expanding the target population and focusing on the combination of diet and PA for increased cost-effectiveness. In the end, facing adversity and having a common vision united stakeholders even if they had different perspectives on the details of the BK.
den Hartog, F., Wagemakers, A., Vaandrager, L., van Dijk, M., & Koelen, M. A. (2013). Alliances in the Dutch BeweegKuur lifestyle intervention. Health Education Journal, 73(5), 576-587. doi:10.1177/0017896913508547	What are the successes and challenges of collaboration processes in BeweegKuur alliances in terms of the Coordinated Action Model?	In-depth interviews and focus groups.	Coordinators of regional and local alliances were interviewed. (n=12). 4 focus groups were held with partners of the regional alliances and partners of the local alliances.	There were 30 regional alliances and 150 local alliances within the BK in 2010. Barriers to success included: a lack of local partners, a strict and time-consuming protocol, unclear role of the GGD, lack of information about the positive outcomes of the BK, difficulty sharing responsibilities, lack of time and resources, perception of alliances as successful because they fit professional goals, lack of integration of health and care.
Raaijmakers, L., Helmink, J., Hamers, F., & Kremers, S. (2013). Implementatie en continuering van de beweegkuur: monitorstudie onder	What results has the BK delivered so far? What facilitating factors and barriers do HCPs perceive in terms of the form, content,	Questionnaires.	In September 2011, all HCPs involved in the BK were asked to fill in a digital questionnaire. (n=256)	HCP motivation was lower than in previous studies due to the governmental decision not to include the BK in basic insurance. Motivating/facilitating factors: the BK offers a "treatment" for obesity, it positively affects patients'

<p>zorgverleners najaar 2011. Maastricht: Maastricht University.</p>	<p>support, and implementation of the BK?          In what ways could the BK be improved according to HCPs?          How are networks around the BK doing?          To what extent is the cooperation between the first line of care and the sports sector in the region concretely formed and structurally embedded?          Do HCPs use the social map?          What barriers do HCPs perceive in terms of the sustained PA behavior of participants?          How motivated are HCPs to continue the BK after 2012 and what factors determine this?</p>		<p>The same questionnaire was sent to all BKIs. (n=139).</p>	<p>psychological and physical health, and it creates HCP networks.          Other networks (between care and sports) still need to be improved.          BKIs have little contact with BK HCPs and there is not enough awareness about this function.</p>
<p>Barte, J. C., Hendriks, M. R., Rutten, G., Veenhof, C., &amp; Bemelmans, W. J. (2014). Implementation of the 'BeweegKuur' in practice: utilization of care of a lifestyle intervention in the Netherlands. <i>International Journal of Health Promotion Education</i>, 52(4), 222-228.</p>	<p>We investigate the participants' utilization of care delivered by dietitians and physiotherapists within the 'BeweegKuur' intervention in the Netherlands compared to the intervention protocol.</p>	<p>Descriptive statistics from health records and standardized participant intake forms.</p>	<p>Records and forms collected from 30 practices offering the BeweegKuur.          n = 379          Mean age of participants is 53.5 years, 67% of participants are women, and most participated in the start-up program.</p>	<p>Participants had on average 2.3 individual sessions and 3 group sessions with the dietician. Group sessions attendance was low.          Participants in the start-up program had on average the number of physiotherapist sessions prescribed in the protocol, while participants in the supervised program had less individual sessions than prescribed, but the right amount of group sessions.</p>
<p>Rutten, G. M., Meis, J. J., Hendriks, M. R., Hamers, F. J., Veenhof, C., &amp; Kremers, S. P. (2014). The contribution of lifestyle coaching of overweight patients in primary care to more autonomous motivation for physical</p>	<p>What is the shift in quality of motivation to increase physical activity and to engage in a healthier diet among participants of the BeweegKuur intervention.</p>	<p>Longitudinal study.</p>	<p>29 out of 150 BeweegKuur locations were given questionnaire surveys with two measurements: at baseline and at 4-months follow-up.</p>	<p>Autonomous motivation to engage in PA increased significantly during the BK.          There was only a small decrease in external motivation to change diet behavior. This may be because dietary behaviors are complex and already formed in childhood, many participants are focused on weight</p>

activity and healthy dietary behaviour: results of a longitudinal study. <i>International Journal of Behavior, Nutrition, and Physical Activity</i> , 11, 86. doi:10.1186/s12966-014-0086-z	What is the contribution of lifestyle coaching to potential changes in motivational quality?		A maximum of 20 participants per program could be included. (n=298)	loss which can make dietary interventions difficult, and many participants have tried and failed to lose weight through dietary changes in the past, leading to a feeling of lack of competence which LSAs may not have addressed enough.
ter Haar, W. (2014). <i>Communiceren en improviseren: Omgaan met dynamiek en complexiteit bij de ontwikkeling en implementatie van een gezondheidsinterventie</i> . (PhD Thesis), University of Amsterdam, Amsterdam, Netherlands.	How do people communicate in processes of cooperation in which different interests, visions and practices come together from different areas of society, who are faced with a common mission, and how can we understand those processes?	Qualitative case study: semi-structured interviews, statistical analyses, Delphi study, literature review.	Participants for all parts of the study were stakeholders recruited from the regional and local networks of the BK.	Communication is messy and complex because of ever-evolving contexts. Certain practices help nonetheless: self-organization, developing more identities, joint developing and using rules for collaboration, and using alternative planning models. Evidence-based practice is not feasible in the context of complex collaboration where co-creation is central instead of the implementation of evidence.
Schutte, B. A., Haveman-Nies, A., & Preller, L. (2015). One-year results of the BeweegKuur lifestyle intervention implemented in Dutch primary healthcare settings. <i>BioMed research international</i> , 2015.	What is the effect of this lifestyle intervention on weight, waist circumference, and PA? What is the association between change in weight and waist circumference and level of uptake of the program and participants' sociodemographic characteristics?	One group pretest/posttest design.	Data was extracted from the registration forms filled in by the LSAs for their participants at all 160 locations during the first and last session. (n=517).	The BK was moderately effective in terms of weight loss (-2.9kg), decreased BMI (-1kg/m <sup>2</sup> ), decreased waist circumference (-4.3cm), increased PA, decreased blood glucose (-4), and decreased blood pressure (-2%). Younger, heavier, more supervised, and more educated participants showed more improvement on average. Attending more consultations with the dietician and LSA also predicted more improvement. The BK is more effective relative to similar interventions.
Berendsen, B. (2016). <i>Measurement and promotion of physical activity: evaluation of activity monitors and a multidisciplinary lifestyle intervention in primary care</i> . (Doctoral Thesis), Universiteit Maastricht, Maastricht, the Netherlands.	This thesis aimed to evaluate the effectiveness of additional guidance in the <i>BeweegKuur</i> intervention executed in primary care in the Netherlands.	Clustered Randomized Controlled Trial, interviews, questionnaires.	30 Dutch practices were recruited, matched in pairs based on size and location, and then randomly assigned to the control or experimental condition. n=411 The participants were, on average, 55.1 year old, married, Dutch women. 48.9% of them	There existed a ceiling effect w.r.t. the amount of guidance received in a certain period of time. There should be room for adaptability to increase the sustainability of the intervention. For both intervention packages: BMI, waist circumference, HbA1c, systolic blood pressure, and up and go tests results changed. There was also increased fruit and vegetable intake, decreased snacks and candy intake, increased walking and independent PA time, and decreased sitting time.

			had T2DM and the average BMI was 34.5.	There was no difference in compliance to Dutch PA norms. Only waist circumference changed more with the supervised program, but it wasn't maintained at 24 mo.
Hitters, K., Lokman, S., Leone, S., Hendriks, M., & Hiemstrs, A. (2016). Effectstudie naar de BeweegKuur Depressieve Klachten stopgezet. Tijdschrift voor gezondheidswetenschappen, 94(5), 174-180.	What are the success factors and barriers for professionals in GP practices when it comes to identifying patients with depressive complaints, and leading these patients towards preventive interventions and particularly exercise-based interventions?	Interviews.	HCPs from all 13 pilot locations were asked to participate in interviews. (n=26)	Hard to identify patients due to complexity, low expected own-effectivity, and time constraints. Facilitators: existence of practice assistants and their accompaniment function, coordinator function. PA cannot always work to solve depression, for example if it is (partly) situational, or if the patient already does it. Motivating patient can be difficult if they don't have a good experience with PA or don't have the budget.
ter Haar, M., Aarts, N., & Verhoeven, P. (2016). Finding common ground in implementation: towards a theory of gradual commonality. Health Promotion International, 31(1), 214-230. doi:10.1093/heapro/dau077	How can we reach common ground for effectiveness in the complexity of the implementation processes of a nationally developed, combined lifestyle intervention that leads to a collaboration for local implementation by various stakeholders in sports and healthcare?	Delphi study. Propositions about the implementation of the BK are made, and participants can rate them on a 4 point scale. This goes on for 3 rounds.	Stakeholders having participated in the implementation of the BK were recruited for the study through regional and local networks. (n=199)	Effective implementation can be achieved through a focus on co-creation through local partnerships with practice, policy and science. It is important to be explicit about ideas and hypotheses to highlight the complexity of the issues at hand. There was a higher drop-out rate from the study amongst HCPs. During implementation, cooperation was geared towards adapting the intervention to the present context. Linking sports clubs to the BeweegKuur was too complicated, so physiotherapists stepped up and offered group sports sessions. Stakeholders embraced the BK's ambitions.
Verberne, L. D., Hendriks, M. R., Rutten, G. M., Spronk, I., Savelberg, H. H., Veenhof, C., & Nielen, M. M. (2016). Evaluation of a combined lifestyle intervention for overweight and obese patients in primary health	What are the effects of the BeweegKuur intervention for overweight and obese patients on lifestyle-related risk factors and health care consumption, in comparison	Quasi-experimental design.	Participants for the intervention group were recruited from practices already participating in a Prospective Multicentre Cohort Study and a clustered Randomized Controlled Trial. (n=127)	Cholesterol and low density lipoproteins decreased in both groups, but there was no differences between groups. HDL cholesterol increased more for the intervention group. Lipid modifying drug prescription increased in both groups.

<p>care: a quasi-experimental design. Family practice, 33(6), 671-677.</p>	<p>to usual care, using longitudinal data of EHRs?</p>		<p>Participants for the control group were selected from usual care practices of which continuous data has been collected from 2008 within the NIVEL-Primary Care Database. (n=254) Patients were matched based on sex, age, BMI category, and having had or not a GP visit or medicine prescription for diabetes in the past year.</p>	<p>Overall, the intervention group did not have better outcomes apart from HDL cholesterol, which is in line with existing literature.</p>
<p>Vries, S. d., Langers, F., Meis, J., Berendsen, B., &amp; Kremers, S. (2016). Blijven Bewegen na de BeweegKuur : de rol van groen in de woonomgeving. In Alterra-rapport, 1566-7197 ; 2701. Retrieved from <a href="http://edepot.wur.nl/370768">http://edepot.wur.nl/370768</a></p>	<p>Is maintaining a higher level of physical activity after the BeweegKuur intervention related to the presence of greenery in the living environment?</p>	<p>Secondary analysis of a longitudinal data set.</p>	<p>The data used originated from Berendsen's cost-effectivity study, which collected data at t0, t1 (6 months in), t2 (12 months), and t3 (24 months, end of the BK). The data was sorted to include only participants who had been to at least two meetings following the end of the first year, and who had not moved during the data collection period. (n=356)</p>	<p>Most popular PA: biking, walking, fitness, gardening/odd jobs, swimming. A green environment is correlated with more walking, less fitness, and less swimming. Fitness is the least sustained PA. Maintenance of PA (max 60 minutes less after a year) is positively correlated with the presence of greenery.</p>
<p>Mulderij, L., Verkooijen, K., &amp; Wagemakers, A. (2019). Gecombineerde leefstijlinterventies voor mensen met een lage SES? Tijdschrift voor gezondheidswetenschappen. doi:10.1007/s12508-019-0225-7</p>	<p>How can we arrive to a system where the development of GLIs other than the ones already approved by the RIVM can continue to develop?</p>	<p>/</p>	<p>/</p>	<p>The RIVM has approved 3 known GLIs for insurance coverage. This is good, but leaves little room for yet unknown interventions to be approved. Because the approved GLIs were not designed specifically for low SES individuals, they might not be effective for them or suited to their needs. Therefore, it would be useful for the RIVM to switch from approving only known interventions to creating a list of criteria for GLIs to get approved.</p>

## Appendix 2: Interview Guide

Relation and/or contribution to the BeweegKuur, and understanding of it:

- How would you describe your/your organization's role with regards to the BeweegKuur?
- Describe the intervention in your own words
  - o Why was it developed?
  - o What are its goals?
  - o What are the expected outcomes?
  - o How does it work?
  - o ...
- What motivates participants to join the BeweegKuur?
  - o How are participants motivated?
  - o According to you, why do most HCPs participate in the intervention?
  - o According to you, why do most patients participate in the intervention?

Potential adverse outcomes

- What are some things that worked well in the intervention?
- Are there some things that did not work as well?
- Are there any potential adverse outcomes?
- Could weight bias be a part of or a consequence of the BeweegKuur?
  - o How would you define weight bias?

Meaning and consequences of the insurance coverage of the BeweegKuur

- What do you think this will change?
- Should the BeweegKuur GLI be included in the basic insurance package in your opinion?
  - o Why or why not?
- Are overweight and/or obesity diseases?

*Extra questions for the researchers and the RIVM*

- Has any of the research (process and/or effect) been used to modify the intervention?
  - o How?
  - o How else could it have been used in your opinion?

*Extra questions for the patient organizations/activists*

- Do you feel your perspective was taken into account during the design, implementation, and evaluation processes?
  - o How?
  - o Could this contribution have been improved?



### Appendix 3: Coding tree

