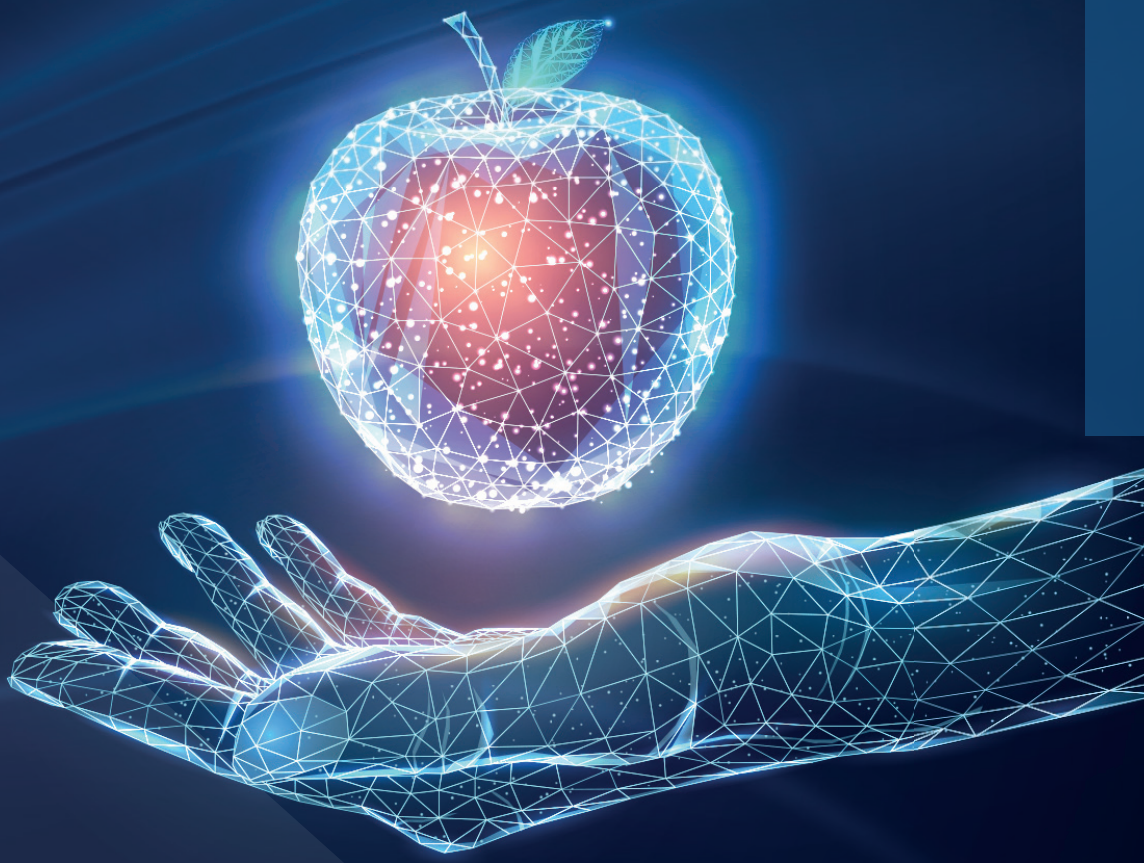

Lifestyle Opportunities

SUPPORTING A HEALTHY LIFESTYLE OF PEOPLE WITH MODERATE TO PROFOUND INTELLECTUAL DISABILITIES

ANNELIES OVERWIJK

Lifestyle Opportunities

Supporting a healthy lifestyle of people with moderate to profound intellectual disabilities

Annelies Overwijk

The work presented in this thesis was performed at the Research Group Healthy Ageing, Allied Healthcare and Nursing, Hanze University of Applied Sciences, Groningen, the Netherlands, at the Research Institute SHARE of the Groningen Graduate School of Medical Sciences of the University Medical Center Groningen, University of Groningen, the Netherlands.

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Table of content

Chapter 1

General Introduction

General introduction

An intellectual disability (ID) can be described as limitations both in intellectual and adaptive functioning in the following domains: conceptual, social, and practical adaptive skills. For individuals with ID, the need for support in daily life is dependent on their capacities and development as well as on the level of ID and mobility[1]. People with moderate to profound ID require support in several domains, for example, regarding language, motor skills, sensory functioning, and activities for daily living[1,2]. Additionally, for healthy living, these individuals need support from their environment with regards to a healthy diet and for performing physical activities.

This population generally has low levels of physical activities and often an unhealthy diet[3,4]. They are more at risk than the general population for an unhealthy lifestyle and the consequences from it[4–7]. Moreover, they have a higher prevalence for various health problems, for example, constipation and being under- or overweight[8] which can be aggravated by an unhealthy lifestyle. Improving this for people with moderate to profound ID may consequently have many benefits: it may give them potential health gain[9], it may also have positive effects on behavior[10], alertness[11], and quality of life[12]. For example, being more physically active may lead to a decrease of challenging behavior and an increase in quality of life and alertness[13].

A supportive environment for healthy living

Healthy lifestyle behavior is generally influenced by different factors; on intrapersonal, interpersonal, institutional, community levels; and by public policy from a socio-ecological perspective (see Figure 1)[14,15]. Similar to the general population, the various levels from the socio-ecological model need to be involved to support healthy lifestyle behavior of people with moderate to profound ID[15]. In the Netherlands, these individuals often receive professional support from ID support organizations regarding living and/or work or participate in organized day programming and, therefore, healthy lifestyles should also be an important aim of the support provided on the institutional level. Related to this, professionals working within these ID support organizations play an important role in the lifestyle support for people with moderate to profound ID on the interpersonal level. Social support on this level helps to improve and maintain healthy lifestyle behavior because people with moderate to profound ID need support from people in their environment for almost every aspect of their lives[16]. Thus, with respect to a healthy lifestyle of these individuals, the interpersonal level consists, for a major part, of direct support professionals (DSPs). DSPs are crucial in this

respect[16]. For example, people with moderate to profound ID depend on the creativity of the DSPs and their input for healthy food choices. For physical activities, they often also need assistance from them. Providing healthy lifestyle support with respect to the autonomy, wishes, and needs of people with moderate to profound ID requires supportive knowledge, skills, and attitudes of these DSPs[15,17–20]. This thesis focuses therefore on the improvement of the interpersonal support of DSPs regarding the lifestyle support of people with moderate to profound ID.

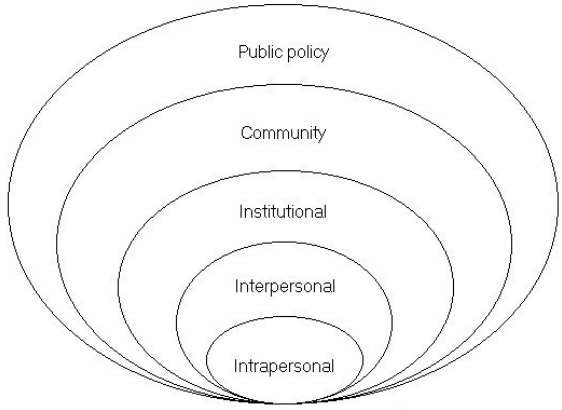

Figure 1 | *Socio-ecological model for health promotion*[14,15]

Support needs of direct support professionals

DSPs who support people with moderate to profound ID on an interpersonal level require the capability to support a healthy lifestyle which may require DSPs' behavior change in order to optimize the support they provide. In examining and improving their role in the support of healthy lifestyles of persons with moderate to profound ID, we have used the combination of both the Theoretical Domains Framework (TDF) and the COM-B system as a theoretical framework. The TDF is an evidence based framework that is used to gain knowledge about the presence of conditions to support a healthy lifestyle[18]. This framework consists of the following 14 domains: (1) Knowledge, (2) Skills, (3) Social/Professional Role and Identity, (4) Beliefs about Capabilities, (5) Optimism, (6) Beliefs about Consequences, (7) Reinforcement, (8) Intentions, (9) Goals, (10) Memory, Attention and Decision Processes, (11) Environmental Context and Resources, (12) Social Influences, (13) Emotion, and (14) Behavioral Regulation[19]. The TDF domains can be addressed to influence the behavior of DSPs in their healthy lifestyle support. For changing behavior, it is part of the COM-B system; see Table 1. To implement

healthy lifestyle behavior support of DSPs and thus improve their behavior, the COM-B system explains the nature of behavior with three components: Capability, Opportunity, and Motivation. In this system, Capability is defined as the person's psychological and physical capacity to perform an activity; Opportunities are external factors outside the individual that influence the performed behavior; and Motivation is the process that energizes and directs a person's behavior[19].

Table 1 | *Behavior Change Wheel's COM-B system in relation to the Theoretical Domains Framework determinants*[18,19]

COM-B		TDF domain
Capability	Psychological	Knowledge
		Skills
		Memory, Attention and Decision processes
		Behavioral regulation
	Physical	Skills
Opportunity	Social	Social Influences
	Physical	Environmental Context and Resources
Motivation	Reflective	Social/Professional Role and Identity
		Beliefs about Capabilities
		Optimism
		Beliefs about Consequences
		Intentions
		Goals
	Automatic	Social/Professional Role and Identity
		Optimism
		Reinforcement
		Emotion

According to the TDF, DSPs require knowledge and skills to support people with moderate to profound ID to live healthy. However, DSPs do not seem to be sufficiently equipped to provide healthy lifestyle support[21,22]. It is important to optimize knowledge and skills of DSPs because insufficiency in these areas are impeding the support to physical activity[23], as well as healthy nutrition[24–26]. To support DSPs, in-depth knowledge about their specific support needs is essential for optimizing their support towards healthy lifestyle behavior for these individuals. Insights into the support needs of DSPs can help ID support organizations to support their staff in following healthy lifestyle policies and guidelines. However, until now, it is not clear which specific knowledge and skills they need.

Behavioral change techniques

With regards to the Capability Domain of the COM-B, one major skill to support a healthy lifestyle is motivating people with ID. To do so and achieve concrete behavior change for people with ID themselves, behavior change techniques (BCTs) can be used by DSPs[17,27]. BCTs are, for example, someone can 'provide instruction on how to perform the behavior' and explain or demonstrate how to use gym equipment or 'set graded tasks' by breaking target behavior into smaller tasks that are easier to perform[17]. BCTs can be used to motivate and stimulate people with ID for healthy lifestyle behavior by DSPs as they have a major influence on this for people with moderate to profound ID. Concrete BCTs that can be used in daily practice are covered in the Coventry Aberdeen London Refined Taxonomy (CALO-RE-NL, a Dutch translation of the original taxonomy). Previous research shows that BCTs can be used in lifestyle interventions and are considered suitable for people with mild ID[27,28]. Knowledge about the use of BCTs may also be beneficial for supporting DSPs in their work during facilitating healthy lifestyle behavior in persons with moderate to profound ID because BCTs show promising results in persons with mild ID[29]. However, their use to support healthy living of people with moderate to profound ID has not yet been examined. It is unclear if BCTs are being used to support people with moderate to profound ID and, if so, which techniques are being used and how. Therefore, their current use for this population should be evaluated.

The attitude of direct support professionals

Beside the Capabilities and Opportunities to support a healthy lifestyle, Motivation to perform supportive behavior is also needed. In the Motivation part of the COM-B model, Intentions, Goals, Beliefs about Consequences, and Beliefs about Capabilities are reflective aspects[19]. Attitude towards behavior is one of the characteristics that determines intention[30] and may also contribute as a mediator to Beliefs about Consequences and Beliefs about Capabilities[19]. Attitude is defined as the thoughts and feelings of DSPs regarding a healthy lifestyle[31]. In accordance with previous research[31], a DSP's positive attitude towards supporting a healthy lifestyle is needed for its implementation and support of persons with moderate to profound ID regarding healthy living[20,32]. In addition, attitude can be influenced by education[31,33,34]. However, there is a lack of knowledge about the attitude of DSPs towards a healthy lifestyle. Insights into DSPs' attitudes can be used in the teams of DSPs to cooperate in improving attitudes where necessary and thus improve lifestyle support. In previous research, an attitude questionnaire based on the TDF domains was developed to gain insights into attitudes of DSPs towards supporting healthy physical activity[31]. However, a

questionnaire for them to measure nutrition attitude is lacking. For that reason, an attitude questionnaire regarding supporting healthy nutrition needs to be developed and evaluated with regard to internal validity.

Development and implementation of a program to support direct support professionals

Regarding the COM-B system, DSPs experience that they do not have the Capabilities to support a healthy lifestyle[24,25,35,36]. Education to support this can improve the capabilities of DSPs and also improves their attitudes[34,37]. For example, training for them in physical activity support will help develop the necessary knowledge and skills and motivation to support physical activities[34]. To improve DSPs' support, it is necessary to tailor education to their needs[38]. Previous research also shows that theory-based interventions are most effective[39–41]. In these, there is an underlying theory that makes it possible to show a connection between the intervention and the outcomes and thus provides knowledge about why something is effective or not. However, there is currently no such theory-based education lifestyle program available that meets the support needs of the DSPs, and thus this should be developed[27,33].

After developing a program, its potential must be examined before widespread implementation can occur[38]. The potential of an intervention can be examined with a process evaluation and a feasibility study[42,43]. In a process evaluation, the implementation of a program is followed within the context. For example, the fidelity is monitored to check whether the intervention is delivered as intended. In a feasibility study, the implementation, the acceptability and suitability of the program, and preliminary results can be examined[43]. Based on an evaluation of the implementation and, consequently, possible improvements of the program, a program can be implemented to overcome the support needs of DSPs to ensure that they are capable of supporting a healthy lifestyle within ID support organizations. Implementation of newly developed interventions is a challenge for ID support organizations due to, for example, the lack of time for implementation[11,31,44] and lack of continuity in staff[11]. For successful implementation, these processes and identification of facilitators and barriers need to be mapped in order to improve further implementation processes[45]. However, it is currently unknown what facilitators and barriers for implementing educational lifestyle programs for DSPs are, and it is not established what processes play a role during implementation.

Aim of this thesis

The aim of this thesis is to facilitate a healthy lifestyle for people with moderate to profound ID by improving the lifestyle support provided by DSPs. In this thesis, this will be achieved by identifying their support needs and designing, implementing, and evaluating an educational lifestyle program to improve DSPs' support of people with moderate to profound ID in living a healthy lifestyle. To achieve the aim of this thesis, DSPs will participate by collaborating as partners in each part of this research and by providing input about their support needs.

Content of the thesis

The first step towards the overarching aim of this thesis is to identify the needs of DSPs for supporting people with moderate to profound ID in order to achieve and maintain a healthy lifestyle; this is addressed in **Chapter 2**. In addition, in **Chapter 3**, the objective is to determine whether and which BCTs are used by DSPs for supporting healthy lifestyle behavior for physical activity and nutrition of people with moderate to profound ID. In **Chapter 4**, the goal is to develop an adapted attitude questionnaire for DSPs towards healthy nutrition of these individuals and to determine the internal validity of this questionnaire. The purpose of **Chapter 5** is to develop a training and education program for DSPs and to describe the design of the evaluation. Subsequently, in **Chapter 6**, the aim is to evaluate the preparation, implementation, and preliminary outcomes of a theory-based training and education program for DSPs in order to learn how to support people with moderate to profound ID in a healthy lifestyle. In **Chapter 7**, the primary findings of this thesis and implications for policy, education, practice, and future research will be discussed.

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Chapter 2

Needs of direct support professionals to support people with intellectual disabilities in leading a healthy lifestyle

Abstract

Background: For a healthy lifestyle, people with moderate, severe, and profound intellectual disabilities living in residential facilities and/or participating in day activity centers are dependent on their Direct Support Professionals. However, it is unclear what knowledge and skills these Direct Support Professionals require to support these individuals in living a healthy lifestyle. Therefore, the aim of this study was to identify the needs of Direct Support Professionals for supporting these people with moderate to profound intellectual disabilities to achieve and maintain a healthy lifestyle.

Method: Direct Support Professionals (n=28) were interviewed with the use of a semi-structured protocol based on the Theoretical Domains Framework. The interviews were analyzed with a theory-driven content analysis.

Results: The most frequently mentioned needs referred to the following domains of the Theoretical Domains Framework: Environmental Context and Resources (n=27), Social/Professional Role and Identity (n=25), Social Influence (n=25), Skills (n=24), and Knowledge (n=23).

Conclusion: To support people with moderate to profound intellectual disabilities in leading a healthy lifestyle, Direct Support Professionals primarily needed support related to the domain environmental context and resources. Within this domain available time, dealing with different seasons, and a healthy lifestyle policy in the organization need attention. Development of interventions targeting these Direct Support Professionals needs is required.

Overwijk, A., Hilgenkamp, T.I.M., Van der Schans, C.P., Van der Putten, A.A.J., & Waninge, A. Needs of Direct Support Professionals to Support People With Intellectual Disabilities in Leading a Healthy Lifestyle. *Journal of Policy and Practice in Intellectual Disabilities*. 2021; *18*(4), 263-272. http://doi.org/10.1111/jppi.12383

Introduction

People with moderate to profound intellectual disabilities (ID) are a heterogeneous group with various health problems[1,2]. They often do not engage in a healthy lifestyle with respect to physical activity and nutrition[3–9]. As many people with ID have higher obesity rates, are more at risk for malnutrition[7,10], and perform insufficient physical activity[8,9,11], it is particularly important for them to live a healthy lifestyle as it can prevent diseases related to obesity and physical inactivity[10,12].

Due to the disabilities of people with moderate to profound ID, they are highly dependent on others[13–16] and need support from their Direct Support Professionals (DSPs) to achieve and maintain a healthy lifestyle[15]. DSPs are staff who work directly with people with ID in their daily activities in both residential facilities and day activity centers (i.e. the place where the individuals with ID live and work or do daily activities). Therefore, these DSPs have a major impact on health promotion[17], and most of them consider supporting and including daily healthy lifestyle for people with ID as a component of their job[18]. However, they often do not know the public health recommendations for physical activity[19] and what type to offer to these individuals[20]. In addition, DSPs require skills, knowledge, and confidence in order to deliver health promotion[17,21]. Insufficient knowledge and skills have previously been mentioned as factors impeding physical activity support[22,23]. Knowledge and training in nutrition are also needed[5,24,25]. Thus, DSPs require more knowledge and skills in order to facilitate a greater amount of physical activity[26,27] and healthy nutrition for people with ID. However, it is currently unclear what type of knowledge and skills DSPs need in order to do so, and an in depth study to determine this information would be beneficial for designing effective interventions to support DSPs. Therefore, the aim of this study was to identify the needs of DSPs for supporting people with moderate to profound ID to achieve and maintain a healthy lifestyle.

Method

Design

A qualitative research design was used. DSPs were interviewed employing a semi-structured protocol based on the Theoretical Domains Framework (TDF)[22,28] in order to obtain information about their support needs for assisting in physical activity and healthy nutrition for people with moderate to profound ID. The TDF is used in this study because it is a widely used evidence based theoretical approach for gaining knowledge into which domains require

attention to influence behavior[22,28–30]. The foundation of the TDF are different psychological theories related to behavior change[28]. A validation of the TDF by Cane et al.[22] resulted in a 14-domain framework covering influences on behavior. This framework focuses particularly on the health domain and can identify intervention components that can assist in modifying the behavior of DSPs when supporting physical activity and healthy nutrition. A complementary theory supporting the TDF domains for changing behavior is the COM-B system[22]. This is a theoretical approach that explains the nature of behavior with three components (Capability, Opportunity, and Motivation) in order to change it. Every domain of the TDF is part of a COM-B component. While the TDF covers the influences on behavior, the COM-B system comprises the nature of behavior. The TDF domains (1) Knowledge, (2) Skills, (3) Memory, Attention, and Decision Processes, and (4) Behavioral Regulation fit within the Capability component. Opportunity consists of (1) Social Influences and (2) Environmental Context and Resources, and the domains (1) Social/Professional Role and Identity, (2) Beliefs about Capabilities, (3) Optimism, (4) Beliefs about Consequences, (5) Intentions, (6) Goals, (7) Reinforcement and (8) Emotion fit within the Motivation component. See table 1 for a representation of the inter-relation of the TDF and the COM-B system, and an explanation of each construct. The TDF and COM-B system have been used previously to gain insights in low levels of physical activity for people with ID, factors that influence DSPs to support physical activity, and the influence of characteristics of both people with ID and DSPs in the support of physical activity[23,27,31].

Table 1 | *The inter-relation of the Theoretical Domains Framework and the Behavior Change Wheel's COM-B system*[22]

COM-B component		TDF Domain	Explanation of TDF construct[30]
Capability	Psychological	Knowledge	Awareness of the existence of something
		Skills	Ability or proficiency acquired through practice
		Memory, Attention and Decision processes	The ability to retain information, focus selectively on aspects of the environment, and choose between two or more alternatives
		Behavioral regulation	Anything aimed at managing or changing objectively observed or measured actions
	Physical	Skills	

Table 1 | *Continued*

COM-B component		TDF Domain	Explanation of TDF construct[30]
Opportunity	Social	Social Influences	Those interpersonal processes that can cause an individual to change their thoughts, feelings, or behaviors
	Physical	Environmental Context and Resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior
Motivation	Reflective	Social/Professional Role and Identity	A coherent set of behaviors and displayed personal qualities of an individual in a social or work setting
		Beliefs about Capabilities	Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use
		Optimism	The confidence that things will happen for the best, or that desired goals will be attained
		Beliefs about Consequences	Acceptance of the truth, reality, or validity about outcomes of a behavior in a given situation
		Intentions	A conscious decision to perform a behavior or a resolve to act in a certain way
		Goals	Mental representation of outcomes or end states that an individual wants to achieve
	Automatic	Social/Professional Role and Identity	
		Optimism	
		Reinforcement	Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus
		Emotion	A complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event

Participants

Participants were recruited from seven care providers across the Netherlands working together in a consortium. Respondents were approached by an assigned and trained contact person from each organization who asked four respondents to participate in compliance with the inclusion criteria in order to provide a heterogeneous sample. The inclusion criteria for DSPs were as follows:

- Supporting adults with moderate ID and/or people with severe/profound ID in residential facilities and day activity centers, or a combination;
- Minimum work experience of six months at the current workplace;
- Minimum education level of senior secondary vocational education.

A total of 28 DSPs participated, all from non-profit, non-governmental organizations. The distribution of DSPs across the seven care providers was not equal: four DSPs were interviewed from each of the seven care providers, except for one care provider with seven DSPs interviewed, and one care provider with only one DSP interviewed. In total, 27 interviews were held with 28 DSPs as one interview was held simultaneously with two DSPs due to private circumstances within the team of DSPs. DSPs were employed at residential facilities (n=19) or at day activities centers (n=6). One was working a night shift (n=1). Two DSPs were working in settings where living and day activities overlapped. All of the participating DSPs supported people with moderate to profound ID, although some of them also supported people with mild ID. Table 2 presents the characteristics of the interviewed DSPs who supported 506 people with ID (male: 51.6%, female: 48.4%) from the age of 18 years. DSPs indicated the following additional disabilities for the people with ID who they support: health, motor, psychiatric, behavioral, visual, and auditory problems.

Table 2 | *Characteristics of Direct Support Professionals (n=28)*

	n	%	Mean	SD	Range
Age in years			45	12	42
Gender					
Male	5	18			
Female	23	82			
Education					
Senior secondary vocational education: Educational theory	13	46			
Senior secondary vocational education: Nursing	7	25			
University of applied sciences: Educational theory	4	14			
Other:					
Senior secondary vocational education: Carer Individual health care	1	4			
Senior secondary vocational education: Sports	1	4			
University of applied sciences: Marketing	1	4			
University of applied sciences: Nutrition and dietetics	1	4			
University: Psychology	1	4			
Work setting					
Residential facility	19	68			
Day activity centre	6	21			
Combination group	2	7			
Night shifts	1	4			
Years of experience with people with ID			20	12	40

Interview protocol

DSPs were interviewed using a semi-structured protocol based on the TDF[22,28]. The domains of the TDF were supplemented with the 'Competences' described by the VGN ('Vereniging Gehandicaptenzorg Nederland', Dutch Association of ID care provider services)[32–35]. The VGN competences were utilized to specify or supplement five domains of the TDF. For example, the competences in the domain Skills of the TDF were specified based on the VGN competences with: ability to motivate/stimulate, connection to people with ID's needs, and communication with people with ID/environment. In the domain of Social/Professional Role and Identity, the reflection on personal actions and increasing an individual's expertise was added from the VGN competences.

Following the composition of the interview protocol after consultation with the other authors, a pilot with three interviews was held to determine its applicability. As a result of the pilot, minor changes were made in which three questions were added related to the characteristics of people with ID, degree of physical activity, and the influence of the seasons on healthy lifestyle activities. In addition, the term heterogeneity was explained and, if DSPs

indicated no support needs, they were asked to explain. The semi-structured interview began with initial questions regarding the attitude towards physical activity and nutrition and how these were supported (See Appendix A for the interview protocol). The following open question was then asked: 'Do you need certain things to support people with ID in physical activity and nutrition?' DSPs were encouraged to think broadly about their support needs. The 14 domains of the TDF were presented for additional support needs. DSPs were asked if there was anything on the list that they would need to support physical activities and healthy nutrition. During the interviews, additional questions based on the answers of DSPs were asked to gain in depth information about their support needs.

Procedure data collection

Face-to-face interviews were held by the first author and four bachelor students of the Hanze University of Applied Sciences (School of Social Studies) from October 2017 until May 2018. These Bachelor Social Work students did internships and were trained and experienced in interviewing as part of their Bachelor program. In addition, the students were provided with specific interview training. First, they performed a test interview with someone from their network. The students received feedback from the first author on their interviewing skills (such as asking more questions and following the protocol). Second, the students conducted their first interview. Again, they received feedback on the same points as in step one from the first author. All of the recorded interviews were checked by the first author, and two respondents were contacted by telephone after the interview for additional information.

Interviews occurred on-site at the care providers or, if desired, at the Hanze University of Applied Sciences. The interview duration averaged 55,97 minutes. The characteristics of the DSPs were requested prior to the interview. Whereas this research focuses on DSPs, only estimated characteristics of the people with ID were requested.

Analysis

The recorded interviews were transcribed and anonymized by the four trained students. All of the transcripts were checked by the first author and adjusted when necessary; the first author listened to random parts of the audio to determine whether the transcriptions were correct. If the transcripts were not fully corresponding to the audio record, adjustments were made to make the transcripts correct and complete.

A theory-driven content analysis was carried out using Atlas.ti 8 software[36]. A codebook was developed based on the 14 TDF domains[22], and it was checked by two researchers (TH, AW). Two researchers (AO, AW) coded two interviews according to the codebook in order to

assess the applicability. In response to the first coding session, the sub code 'family and friends' was only mentioned under the code 'Social Influence' and was removed from 'Environmental context and resources' to prevent misunderstanding. Finally, 'norms from colleagues' was removed from 'Social Influence' to prevent misconception with the construct 'norms and values from colleagues and their influence' within the domain 'Social/Professional Role and Identity'. Additional remarks about the codes to be allocated were included in the margin of the codebook. It was agreed that the analysis should closely accord with the responses of the DSPs. Two researchers (AO, AW) coded all of the interviews. The results were compared, and differences were discussed until 100% consensus was obtained. Frequencies were calculated in order to identify the most frequently mentioned support needs according to the DSPs.

Ethics

This study was conducted according to the principles of the Declaration of Helsinki and has been independently reviewed, and dispensation was received by the Medical Ethical Committee of the University Medical Centre Groningen (study number: 201700164). All of the respondents were informed about the study and provided written consent to participate. Participation of all respondents was voluntary and of no consequence to their work evaluations or rewards. DSPs had the option to withdraw from participation without any consequences. DSPs were aware that the collected data were processed anonymously and cannot be linked back to the person or organization.

Results

All DSPs had a positive attitude towards healthy nutrition and physical activity. For example they stated: *'I think healthy nutrition is very important, I also eat healthy myself' (3.20)*, and, '*because if you just exercise a lot, you will feel better and you will be healthier' (8.15)*, and finally, '*well, I think that's important for everyone. So for yourself, but also for people who depend on us, that is certainly important. And they are in a wheelchair, so they already have less physical activity than we do' (15.20)*. To encourage a healthy lifestyle DSPs already performed several activities, for example choose sandwich spreads with healthy and unhealthy colors (green and red), getting fresh vegetables from the market every day, stimulate walking or biking to the day activity centre, the presence of physical activity programs, and letting people with ID help with daily activities.

The following five domains emerged from the theory-driven content analysis as most frequently mentioned by DSPs when asked about their support needs: Environmental Context and Resources (n=27), Social/Professional Role and Identity (n=25), Social Influences (n=25), Skills (n=24), and Knowledge (n=23). In order of frequency, the other domains of the TDF were as follows: Intentions (n=16), Behavioral Regulation (n=12), Reinforcement (n=10), Memory, Attention, and Decision Processes (n=10), Optimism (n=9), Goals (n=8), Emotion (n=8), Beliefs about Consequences (n=7), and Beliefs about Capabilities (n=5).

The domain Environmental Context and Resources emerged most often as a support need that facilitates a healthy lifestyle. Dealing with seasons and a healthy lifestyle were most important as DSPs need support to deal with the different weather conditions and seasons; for example, how to be physically active when it rains or how to eat healthily in summer. One respondent explained: *'…What I, for example, noticed last summer: if it was hot then people had…, then you do not feel like cooking, so then there was sometimes some fries. But, yes, well, is that the end of the world?...' (7.87)*. Another respondent explained: *'When it rains, most of them don't feel the need to go outside' (2.38)*. Dedicating time to support a healthy lifestyle within the available time is also challenging. As illustrated by a DSP: *'…outside the day activities you are mainly concerned with caring and the laundry and the ... that kind of things…' (24.62)*. Moreover, there is a need for attention to be paid on an organizational level to lifestyle. A healthy lifestyle policy within the organization for everyone to follow is necessary; according to DSPs: *'…that there are simply guidelines that we all keep going in the same way…' (14.43)*. And: *'For our organization it is now important, but just not important enough to say; well, you know, if we really want our clients to participate, we just have to facilitate it' (7.41)*.

The domain Social/Professional Role and Identity was indicated by almost all of the DSPs as facilitating a healthy lifestyle. Dealing with norms and values of colleagues and their influence on the provided support was a support need. For example, colleagues may have different opinions about what constitutes healthy food. A DSP explained: *'…what I myself sometimes run into is that there is just ... That colleagues sometimes look differently at what is allowed, what healthy food is…' (7.19)*. Another DSP described: *'…That depends on the DSP so to say. What is being done for physical activity... One DSP thinks it is more important than another ...' (12.26)*. Additionally, the autonomy of the people with ID is a topic with which DSPs struggle within this domain. DSPs experience a dilemma regarding to what extent making an unhealthy choice is the responsibility of people with ID themselves or the

responsibility of their DSP. As one DSP explained: *'…Here, in our atmosphere, it is a choice of clients ... I think that is a very difficult discussion. How far do we go exactly?' (5.21)*.

Within the domain of Social Influence, the support from family/ parents and others plays an important role in a healthy lifestyle for people with ID. A social health-promoting environment for these individuals will likely support them towards achieving and maintaining a healthy lifestyle. The following quotes illustrate this: *'…Yes, it's just that I think it's very important that we have the family and the people around the people with ID also in the plan of what we want: that they live healthier and eat healthier…' (26.83)*, and *'… Families… could also play a role… that you link, uh… a brother or sister who exercises with a sibling who lives here…' (20.29)*. People with ID can also benefit from the social support of DSPs themselves and the cooperation and coordination between colleagues for a healthy environment. As one DSP explained: *'...nutrition and physical activity that really does pay off, but then you have to be very consistent and everyone has to do that. And, yes, you work here with 14 DSPs, so how do you get that transferred well to everyone and then: does it happen? And yes, that is just difficult...' (7.74)*. Consecutively, a transfer in expertise of physical activities can support DSPs in the execution of activities in daily situations, both from health professionals to DSPs as between DSPs.

In the Skills domain, competences (e.g., communication with people with ID to motivate/stimulate) were a support need for DSPs. There is a need for skills to communicate with people with ID, to connect to their individual needs, and there is a difficulty of motivating and stimulating them. The heterogeneity of this population and the individual support they need is a challenge for DSPs. One of them indicated: *'…because they need so much proximity and are all so individually very complex… And also being so different is sometimes difficult to undertake activities…' (12.9)*. DSPs explained the following regarding the difficulties in motivating: *'…also in the... the daily care and such things. There you might also need some tools, to still look how you can motivate people more, to do things themselves…' (24.64)*, and *'…but it is also something like... to keep that motivation…' (25.14)*.

Finally, there is a lack of Knowledge about healthy nutrition and physical activity for people with ID. It is difficult for DSPs to locate the correct information about healthy food, in general, but they also need knowledge that is specific for the disabilities of people with ID (e.g., healthy food for chewing and swallowing problems as well as low energy problems). This is illustrated by the following quote: *'…it is also quite difficult to get good information about what is healthily and also; what is healthy food for our elderly? And what is healthy food for our elderly with an intellectual disability…' (7.22)*. Although, for some residential

facilities the evening meals are centrally prepared, knowledge about healthy nutrition can help DSPs to influence the other food intake over the day. Another DSPs expressed the knowledge for physical activity by the following quote: *'…I also think a little about the knowledge of people who are just not that mobile, how you can do that…what physical activity you can do with them' (24.51)*. Knowledge is fundamental in order for DSPs to provide the support that these individuals need for a healthy lifestyle.

Discussion

Principal findings

The aim of this study was to identify the needs of DSPs for supporting people with moderate to profound ID to achieve and maintain a healthy lifestyle. DSPs most frequently indicated needs for support in the following five domains: (1) Environmental Context and Resources, (2) Social/Professional Role and Identity, (3) Social influences, (4) Skills, and (5) Knowledge. Within these five domains, the following support needs were relayed: (1) dealing with weather conditions and available time, (2) dealing with norms and values of colleagues and the autonomy of people with ID, (3) support from family, parents, and colleagues, (4) competences such as motivating and stimulating people with ID, and (5) knowledge about healthy nutrition and physical activity that is specific for people with ID.

The authors' findings regarding the importance of environmental and social support for people with moderate to profound ID to achieve a healthy lifestyle concur with the results of Kuijken et al.[37] and the results of Bossink, Van der Putten, and Vlaskamp[31]. These studies confirm the importance of social support and the physical environment related to the dependency on others of people with ID[37]. In addition, support on an organizational level, influence of seasons/weather, and social influences were mentioned in earlier studies[23]. In the present study, weather conditions and time were mentioned as the most important support needs, although they consisted of slightly different environmental factors compared to the study of Kuijken et al.[37] in which health education, facilities, and location of residence or work were indicated. In addition, the present study focused explicitly on the support needs of DSPs, however, the purpose of the study of Bossink, Van der Putten, and Vlaskamp[31] was to determine the barriers and facilitators for supporting physical activity.

An important additional finding of this study is that professionals face potential conflict between their personal norms and values and those of their colleagues, which was not mentioned in other studies. This conflict highlights the need for support at the policy and

organizational levels to implement physical activity in the daily routine and, with that, advocate for healthy lifestyle behavior. This is in accordance with previous research that suggests that DSPs require clear lifestyle guidelines in order to support a healthy lifestyle[17,26,38,39]. This lifestyle guidelines should consist of an elaborated mission and vision where DSPs can conform to (e.g. a lifestyle plan for people with ID)[17,38].

This study demonstrates the lack of Knowledge about healthy nutrition and physical activity for people with moderate to profound ID. The support need in the Knowledge domain was also reported by Hamzaid et al.[25] who described that limited nutrition knowledge for caregivers influences healthy nutrition. Training in nutrition for professionals was also recommended by Humphries et al.[5]. The Knowledge and Skills domain was also indicated by Bossink, Van der Putten, and Vlaskamp[31] as being needed in order to support physical activity. Furthermore, Doherty et al.[24] identified carers' and support workers' unmet training needs of correctly cooking and eating as well as supporting exercise activities (for weight management) for people with ID. However, these studies do not provide an in depth analysis of support needs for behavior change besides the Knowledge domain[25] or about both nutrition and physical activity[31]. Moreover, the study of Doherty et al.[24] is not from the perspective of DSPs themselves but from the perspective of people with ID regarding experienced barriers and facilitators.

For this study, DSPs indicated support needs on improving Capability (the TDF domains Knowledge and Skills), Opportunity (the TDF domains Social Influences and Environmental Context and Resources), and Motivation (the TDF domain Social/Professional Role and Identity). Thus, the support needs of the DSPs from this study encompass all three parts (Capability, Opportunity and Motivation) of the COM-B system[22]. The COM-B system is designed to analyze behavior for intervention design and consists of Capability, Opportunity, and Motivation. This system helps to visualize which domains are essential in changing behavior and, therefore, are essential for intervention development[22]. In this theoretical approach, Capability is presented as the person's psychological and physical capacity to perform an activity for which Knowledge and Skills are required. Motivation is the process that energizes and directs a person's behavior. Opportunity is described as external factors outside the individual that influence the performed behavior[40].

Strengths and limitations

A strong aspect of this study is the variety of respondents who were recruited from seven different care providers in the Netherlands. However, the distribution of DSPs interviewed

across care providers was not equal, this may have led to bias of certain types of organizations. Although, the impact of this distribution is limited as saturation was reached during the data collection. The DSPs in this study had different educational backgrounds, diverse work settings, a wide range of years of experience with people with ID, and they support a diverse group. With this sample, the authors were able to form a well-rounded picture of the support needs that are required for DSPs to support a healthy lifestyle. Another strength of this study is the use of the TDF[22,28] as a theoretical framework. It guided both the data collection and the analysis for gaining an in-depth perspective of behavior change. This study presents comprehensive in-depth knowledge from the perspective of the DSPs on their specific needs for supporting people with moderate to profound ID towards achieving a healthy lifestyle. In contrast, other studies mainly focus on either physical activity or nutrition[5,23,25] whereas this study focused on both of these themes to support a healthy lifestyle. Therefore, this study presents information that is relevant for intervention development and aims for DSPs to increase their support of physical activity and healthy nutrition.

Whereas the TDF is a strength in this study, it could also be a limitation. Although the authors have analyzed the data with an open mind, and all the quotations fitted into domains of the TDF, this more deductive analyzing method may have narrowed the view on the results. Though, it should be noted that DSPs had the space for additional information based on practical knowledge during the interviews. Another limitation of the study might be a longer timeframe of recruiting and collecting data, however this was inevitable as we were dependent of the support of care providers that sometimes had different priorities. There could be a bias in the sample due to the voluntary participation of the respondents as DSPs who are interested in the topic were possibly more motivated to participate. The positive attitude of the participants towards a healthy lifestyle is notable, and this positive attitude may have distorted the results of the support needs and also the representativeness. Nevertheless, DSPs with a positive attitude did have multiple support needs. Those with a less positive attitude can also benefit from interventions that target these support needs. Another limitation in the sample was that some DSPs also supported people with mild ID and, for them, it was sometimes difficult to formulate an answer for the interview questions that were focused on individuals with moderate to profound ID.

Implications for practice, policy and future research

From this study, five domains for support needs of DSPs emerged. For daily practice it is important to be aware of these support needs. The expectations of DSPs to support a healthy lifestyle of people with ID without prior knowledge and skills is too optimistic. Specialists, like physiotherapists and dieticians, should be aware of the knowledge and skills gap DSPs experience in their support. These specialists can work together interdisciplinary with DSPs to support them with their knowledge. Moreover, managers should facilitate support for DSPs to perform their tasks for a healthy lifestyle, for example by additional education and training.

Development of theoretical based interventions to support DSPs are needed[21,38]. To meet the support needs of DSPs, additional training in physical activity support influences the behavior of them, particularly their Capability and Motivation[31]. On the other hand, interventions for healthy nutrition are particularly insufficient[38]. However, research on healthy nutrition for the complexities of people with ID (e.g., with additional disabilities like chewing problems and energy problems) is minimal, although nutrition and physical activity are both important for a healthy lifestyle[3,7]. Also, DSPs require knowledge about healthy nutrition that is specific for people with ID thus research in this field is required. Future interventions should be tailored to the needs of DSPs while considering their important role in the support of people with ID[17]. In turn, these individuals can benefit from such health promoting interventions focused on physical activity and healthy nutrition and, accordingly, health inequalities in the lifestyles of these individuals may decrease compared to their non-disabled peers[41,42].

In this study we indicated the need of DSPs for skills to motivate and stimulate people with moderate to profound ID towards achieving a healthy lifestyle. Behavior Change Techniques (BCTs) can facilitate improving lifestyles in the general population[28,43,44] and can also be suitable for adults with mild ID to do so[45]. Whether BCTs can be used to facilitate engaging in a healthy lifestyle for those with moderate to profound ID is still unclear. Research is required in order to gain understanding about the usability and effectiveness of BCTs in this population, to meet the needs of DSPs for motivation skills. Knowledge about effective components for intervention can improve the effectiveness of lifestyle interventions.

Conclusion

The needs of DSPs to support people with moderate to profound ID for engaging in physical activity and healthy nutrition were identified using the TDF as a theoretical approach. They frequently mentioned five domains. Support in the Environmental Context and Resources was indicated by all of them. Within this domain available time, dealing with different seasons, and a healthy lifestyle policy in the organization need attention. Interventions that are tailored to the needs of DSPs need to be developed in order to better equip them in supporting persons with moderate to profound ID to be involved in physical activity and healthy nutrition because of DSPs' meaningful role in the support of this population.

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Appendix A: Interview protocol

First part

Background information people with moderate to profound ID

1. Do you work mainly with an equal (homogeneous) or different (heterogeneous) group?
2. Does the group have a fixed composition/ or is it a changing group of people with ID?
3. What is typical for the group of people with ID you work with in five key words?

- Degree of intellectual disability: moderate/severe/profound ID
- Additional disabilities
  (Motor/visual/auditory/health problems/psychiatric/behavior problems)
- Degree of motor impairment: Wheelchair user?

Second part

Support needs

1. What is your attitude towards healthy food?
   1.1 What is your attitude towards physical activities?
   1.2 What is a little physical activity for people with ID, and what is a lot of physical activity?
2. How is the support for nutrition?
   2.1 How is the support for physical activities?
   2.2 What is currently going well with regard to nutrition and physical activity?
   2.3 What are the areas for improvement regarding nutrition and physical activity?
   2.4 Is there a difference regarding nutrition and physical activity depending on the seasons?
3. Do you need certain things to support people with ID in physical activity and nutrition?
   What do you need?

Possible additional questions:

- Are there other things which are important?
- How do you personally impact the support provided?

(Knowledge/ skills/ own norms-values/ beliefs about capabilities/ optimism/ beliefs about consequences/ reinforcement/ intentions/ goals/ memory, attentions and decision processes/ emotions/ behavioral regulation)

- Are there things in the environment which impact the support provided?

(Social influences, environmental context and resources)

- Are there characteristics from people with ID that impact the support provided?
- When time is an important factor:

'If you do have time, what do you need to encourage people with ID to do physical activities and eat healthy?'

- If there is no support need:

Why is there no need for support?

4. Are there things on this list that we have not discussed yet, but that are important in the support of nutrition and physical activity?

Domain	*Example*
Knowledge	Nutrition guidelines, physical activity guidelines for people with ID, physical activities.
Skills	Practical skills (for example: carrying out activities), competences (connection to people with ID's needs, communication with people with ID/environment, being able to motivate/stimulate), see opportunities in people with ID.
Social/ Professional Role and Identity	Professional boundaries (what do you can/cannot), commitment with organization, own norms/values vs. professional norms/values and the influence on the support, norms/values of colleagues and the influence, reflection on personal actions and raise expertise.
Beliefs about Capabilities	Self-confidence, confidence in own support for people with ID, idea that you can influence lifestyle.
Optimism	Optimistic (hopeful/positive)/pessimistic (gloomy) from one's own person, trusting that desired goals are achieved.
Beliefs about Consequences	Expected outcomes and consequences of this on lifestyle.
Reinforcement	Rewards (structural/non-structural, proximal/distal), stimulation, consequences with regard to behavior, tenacity.
Intentions	Conscious intentions and stability.
Goals	Setting small or big goals and prioritize (the main goal first), autonomy (independence) of people with ID, implementation of goals (also in the long term).
Memory, Attention and Decision Processes	Memorize knowledge and apply it in your own situation, choose between alternatives (solutions), cognitive overload/tiredness (taking knowledge and processing is difficult due to overload/tiredness).
Environmental Context and Resources	Influence environment (friends/family), material resources, impeding/stimulating factors, and influence from organization.

Domain	*Example*
Social influences	External pressure, norms (behavior rules) from the environment/colleagues, support from the environment, cooperation and coordination, be a role model.
Emotion	Anxiety, stress, other personal matters that affect.
Behavioral Regulation	Breaking habits, seeing opportunities, planning behavioral change, self-monitoring (keeping an eye on the progress of your own behavior).

Finally

1. Do you have any additions to this interview?
2. Do you have any comments regarding this interview?
3. Do you want to participate again in research?

This interview protocol was developed based on Cane et al.[22] and Michie et al.[28] and supplemented by the description of the VGN competences[32–35] (Dutch Association of ID care provider services).

Chapter 3

Use of behavior change techniques by direct support professionals to support healthy lifestyle behavior for people with moderate to profound intellectual disabilities

Abstract

Background: Behavior change techniques (BCTs) can be employed to support a healthy lifestyle for people with intellectual disabilities. The aim of this study is to determine if and which BCTs are used by direct support professionals (DSPs) for supporting healthy lifestyle behavior of people with moderate to profound intellectual disabilities.

Method: Direct support professionals (n=18) were observed in their daily work using audio-visual recordings. To code BCTs, the Coventry Aberdeen London Refined (CALO-RE-NL) taxonomy was employed.

Results: Direct support professionals used 33 BCTs out of 42. The most used BCTs were as follows: 'feedback on performance', 'instructions on how to perform the behavior', 'doing together', 'rewards on successful behavior', 'reward effort towards behavior', 'DSP changes environment', 'graded tasks', 'prompt practice', and 'model/demonstrate behavior'.

Conclusions: Although a variety of BCTs is used by DSPs in their support of people with moderate to profound intellectual disabilities when facilitating healthy lifestyle behavior, they rely on nine of them.

Overwijk, A., Van der Putten, A.A.J., Van der Schans, C.P., Willems, M., Hilgenkamp, T.I.M., & Waninge, A. Use of behavior change techniques by direct support professionals to support healthy lifestyle behavior for people with moderate to profound intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*. 2021; *34*(4), 1048–1056. https://doi.org/10.1111/jar.12845

Introduction

A healthy lifestyle is important for reducing health risks at an older age[1,2] and maintaining quality of life for individuals with moderate to profound intellectual disabilities[3]. This population has various health problems such as cardiovascular risks, epilepsy, reflux, and under- and overweight[4,5]. A healthy lifestyle can help to prevent diseases and problems related to physical inactivity such as obesity and also the occurrence of behavioral problems or decreased mental well-being[1,2,6]. Depending on the level of disability, people with moderate to profound intellectual disabilities need support from others in their daily life[7–9]. Specifically, in this population, mobility problems are highly prevalent because they are related to more severe intellectual disabilities[7]. Therefore, people with intellectual disabilities require encouragement from their direct support professionals (DSPs) for healthy lifestyle behavior[10,11].

Behavior change techniques (BCTs) can facilitate and motivate persons in order to live healthier[12]. These BCTs are effective in the general population for supporting healthy lifestyle behavior[13–15]. For example, to change behavior someone can 'provide instruction on how to perform the behavior' and tell or show how to use gym equipment or 'set graded tasks' by breaking target behavior into smaller tasks which are easier to perform[12]. Due to the dependence of people with moderate to profound intellectual disabilities, it is important to use techniques which are easy to use for them and their DSPs. Earlier research shows BCTs are frequently used in lifestyle interventions for people with intellectual disabilities[16]. A first exploration that was made using BCTs for supporting persons with mild intellectual disabilities in order for them to live healthy lives showed that 24 out of 40 BCTs of the Coventry Aberdeen London Refined taxonomy (CALO-RE-NL, a Dutch translation of the original taxonomy) are considered to be suitable[12,17]. Yet, it is unknown if and which of them are currently used by DSPs for supporting people with moderate to profound intellectual disabilities. Moreover, DSPs indicated in a previous study that they need tools to motivate people with intellectual disabilities for a healthy lifestyle. Consequently, knowledge about the use of BCTs is important in the support of DSPs in order for them to assist in healthy lifestyle behavior[18] and contribute to the development of training and education programs. Therefore, the objective of this study is to determine if and which BCTs are used by DSPs for supporting healthy lifestyle behavior for physical activity and nutrition of people with moderate to profound intellectual disabilities.

Method

Design

This is an observational study. DSPs who support people with moderate to profound intellectual disabilities were observed in their daily work by using audio-visual recordings to determine which BCTs they used to promote healthy lifestyle behavior for physical activity and nutrition.

Participants

Representatives from six care providers selected 27 DSPs complying with the inclusion criteria.

Inclusion criteria of DSPs:

- Supporting adults with moderate and/or severe/profound intellectual disabilities in residential facilities and day activity centres or a combination;
- Minimum work experience of six months at the current workplace;
- Minimum education level of senior secondary vocational education or university of applied sciences.

Participation of the DSPs was voluntary. Of the 27 selected DSPs, 18 provided written informed consent for the study. After this was obtained from the DSP, it was acquired from the legal representative (family member or curator) of the involved people with moderate to profound intellectual disabilities.

Of the 27 DSPs that were approached, nine declined participation. The reasons for not participating were as follows: physical illness (n=1); not being able to perform the recordings during the available research time (n=1); possible unrest of people with intellectual disabilities because of recording in the group (n=2); not receiving support from colleagues to participate in the study (n=2); no longer interested in the study (n=2); not getting written informed consent of people with intellectual disabilities in time (n=1); and dropping out without a clear reason (n=1). One participant had two reasons for dropping out.

In this study, a total of 18 DSPs participated from six care providers. Table 1 depicts the characteristics of the DSPs. These DSPs supported 74 people with moderate to profound intellectual disabilities. The distribution of moderate, severe, and profound intellectual disabilities was respectively, as follows: 50% (n=37), 23% (n=17), and 27% (n=20). The mean (SD) age of people with intellectual disabilities was 48.0 years (17.4), and 50% was female (n=37). Of the people with intellectual disabilities, 27 were wheelchair bound, and six people with intellectual disabilities walked with support such as with a walker. Additional problems

were: health issues (n=32), visual problems (n=32), motor problems (n=30), psychiatric problems (n=20), behavioral problems (n=13), hearing problems (n=13), and dementia (n=3). Of the people with intellectual disabilities, 47 (64%) had multiple disabilities. In total, 12 people with intellectual disabilities were supported by two DSPs from the sample in this study.

Table 1 | *Characteristics of the DSPs (n=18)*

Age in years, mean (SD)	44.7 (12.5)
Gender, n (%)	
Female	15 (83)
Male	3 (17)
Education, n (%)	
Senior secondary vocational education: Educational theory	9 (50)
Senior secondary vocational education: Nursing	4 (22)
University of applied sciences: Educational theory	4 (22)
Other:	
University of applied sciences: creative therapy	1 (6)
Supplemental lifestyle training, yes (%)	7 (39)
Work setting, n (%)	
Residential facility	11 (61)
Day activity centre	4 (22)
Combination group	3 (17)
Years of experience with people with intellectual disabilities, mean (SD)	21.6 (12.2)
Years working on current workplace, mean (SD)	10.9 (11.4)
DSP-to-people with intellectual disabilities ratio, mean (SD)	2.3 (1.2)

Protocol

A protocol was made to structure the recordings which occurred on three weekdays during two hours (e.g., 8.00-10.00, 12.00-14.00, 16.00-18.00) in order to determine an adequate representation of the daily situation. DSPs were asked to perform their regular activities as if there was no observer. Because of the privacy of the people with intellectual disabilities, activities concerning personal hygiene (e.g., showering and changing) were not recorded. Those for whom there was no written informed consent to participate in the current study were kept out of view during the recordings, or the recordings were stopped if the DSP was interacting with that specific person. If the people with intellectual disabilities (for whom written informed consent was given by legal representatives) indicated at a specific moment they did not want to be recorded, the recordings were stopped or that person was kept out of view. A pilot recording with one DSP was held to test the protocol and instruction as well

as to improve the procedure. The pilot recording was judged by three authors (AO, AW and MW) for usability of the data in relation to the data analysis. Because there were no changes made in the protocol after the pilot, these recordings were also included in the results. Data collection occurred from November 2017 until February 2019.

Procedure

The characteristics of both DSPs and persons with intellectual disabilities were collected with an online questionnaire, and the characteristics of persons with intellectual disabilities were filled in by the DSP. Data were aggregated on the following characteristics of the DSPs: age, gender, education, work setting, years of experience with people with intellectual disabilities/on current workplace, number of people with intellectual disabilities, and number of professionals. For people with intellectual disabilities, age, gender, level of intellectual disabilities, mobility, and additional disabilities were described.

Interns or an employee of the participating DSP made the recordings (from now on 'recorder') to maintain normalcy in the observed situation as much as possible. Recorders were instructed with a protocol and face-to-face. The face-to-face instruction consisted of (1) an explanation of the study; (2) observation methods; (3) answering questions about the script; and (4) practical and important aspects, for example technical instruction about how to use the camera and how to safely store data after recording. During the recordings, the first author (AO) was available for questions.

After the data collection, the recordings were saved on two separate external hard drives (secured with different passwords). The passwords were only accessible by the involved researchers and were saved separately from the data. After copying the data and making a back-up, the memory cards in the video cameras were formatted.

Coding of BCTs

The Coventry Aberdeen London Refined (CALO-RE-NL) taxonomy[12,17] was used to code the BCTs that were applied by the DSPs. This theoretical evidence based taxonomy is developed for behavior change in interventions to increase a healthy lifestyle related to physical activity and healthy food consumption[12,19]. In this study, the provoking of behavior related to physical activity and nutrition was coded, for example drinking a cup of water or move along when getting dressed. Examples of the BCTs for people with mild intellectual disabilities were operationalized and adapted for people with moderate to profound intellectual disabilities[17]. For example, in BCT 21, instructions were proposed on how to perform the behavior. Instead of explaining in which order to dress, for people with moderate to profound intellectual

disabilities, it was explained that they could lift their arm to put on a sweater. In BCT 9, it was encouraged to set graded tasks, for people with moderate to profound intellectual disabilities, the tasks were already set, for example, by first lifting the head, then putting the arm in the right position to finally turn around. Using the first recording, a validity check within the research team (AO, AvdP, MW, TH and AW) was conducted to confirm the coding. Subsequently, after the first coding and validity check, two BCTs were added to the original list[12]. Certain tasks were completed together with the individuals with intellectual disabilities instead of doing it themselves (e.g. throw a ball together or put aside a stuffed animal in order to make space available to do a task). Therefore, 'Doing together' (BCT code 22a) and 'DSP changes environment' (BCT code 24a) were added to the coding list. With these additions, a total of 42 BCTs were used to code the recordings. All recorded time was coded with these BCTs.

Interrater reliability (IRR) was calculated between two authors (MW and AO) and between the first author and four trained students of the Hanze University of Applied Sciences (Groningen, the Netherlands). First, a third of the recordings were coded independently by AO and MW. A total of 92 minutes and 15 seconds of six different DSPs were scored (seven fragments at the beginning of the coding and nine fragments halfway). For each fragment, 42 BCTs were coded on 'use' or 'non-use' and the IRR was calculated as the percentage of absolute agreement. The IRR was 90.0% (we considered an agreement of 80% as sufficient). Second, recordings were separately coded by the first author and the four trained students. At the beginning of the coding, the IRR was calculated using the same recording moments as AO and MW. The coding was compared, and disagreements were solved by consensus discussion. The IRR score with the four students in the first round was 86.7%-87.8%. Subsequently, the students coded half of the available recordings. Halfway through the coding, the IRR was recalculated with the same recording moments as AO and MW; in this second round, the IRR was 90.7%-92.1%. Thereafter, the students coded the remaining recordings.

To guarantee the reliability of the coding, the following procedure was followed: after the BCT coding by the students, a check was done by the first author. The students encountered three debatable codings that were checked and discussed until consensus was reached. Lastly, the first author performed a sample check on the coding. Because of earlier coding and collaboration between AO and MW, 45 earlier coded BCTs were added to the coding.

Analysis

Characteristics of both DSPs and persons with intellectual disabilities were described by calculating means, standard deviations, numbers and percentages. The frequency of used BCTs for all of the recording moments was calculated, and the sum of 'uniquely used BCTs' was calculated on the total number of recordings per DSP. To avoid bias of which BCTs were mostly used, the frequency score of 'uniquely used BCTs' was used as a correction for the number of measurements.

To gain insights in the use of the top nine uniquely used BCTs related to the characteristics of the people with intellectual disabilities, the Mann-Whitney test was executed. For this test, two groups were made: DSPs who support people with moderate intellectual disabilities and DSPs who support people with severe to profound intellectual disabilities. Five DSPs were excluded because they supported people with moderate to profound intellectual disabilities or people with moderate to severe intellectual disabilities in both groups; included were 8 DSPs supporting people with moderate intellectual disabilities, and 5 DSPs supporting people with severe or profound intellectual disabilities.

In addition, analysis were performed on the frequency of use of the top nine used BCTs for the following characteristics of DSPs: gender, education, additional training. Correlations (Pearson Correlation and Spearman's rho) were calculated for work experience of DSPs and policies of the organization on the frequency of the top nine used BCTs.

Ethics

The Medical Ethical Committee of the University Medical Centre Groningen gave dispensation to conduct the study (study number: 201700164). All of the participants provided written informed consent for the study. Recorders signed a declaration of confidentiality.

Results

The total number of recording hours was 55:36:54 (hh:mm:ss). The total recording time per participant ranged from 01:02:15 to 05:05:50. Due to practical circumstances, not all of the recordings were performed as intended. The number of observation moments, recording days, and time range differed from the protocol. Seven DSPs performed one or two observations, and 11 DSPs (out of 18) reached the intended number of three observation moments. Three DSPs recorded on weekend days instead of week days. Lastly, from eleven DSPs, the observation moments were on two of three moments recorded in the same time

range of the day caused by the schedule of the people with intellectual disabilities, for example, because they were mostly recorded during active moments.

Table 2 provides an overview of the used BCTs. Every DSP used BCTs to support healthy lifestyle behavior for physical activity and nutrition. Out of 42 BCTs, 33 were utilized by DSPs. However, nine of the used BCTs account for 116 of the 226 uniquely BCTs that were used; this is more than half of all of the uniquely used BCTs. The following BCTs were most frequently observed: 'feedback on performance' (n=16), 'instructions on how to perform the behavior' (n=16), 'doing together' (n=15), 'rewards on successful behavior' (n=14), 'reward effort towards behavior' (n=12), 'DSP changes environment' (n=12), 'graded tasks' (n=11), 'prompt practice' (n=10), and 'model/demonstrate behavior' (n=10). The DSPs who used the most BCTs in total (highest coding of 42 BCTs) also employed the most uniquely BCTs (highest coding of 24 BCTs). There is a wide variance in the uniquely used BCTs with the highest coding at 24. On the other hand, the lowest coding of uniquely used BCTs is two.

To gain insights in the use of BCTs for people with moderate intellectual disabilities and people with severe to profound intellectual disabilities, the Mann-Whitney test was executed. No statistical significant differences were found between the use of the top nine uniquely used BCTs and the degree of intellectual disabilities (U=8.5, z=-1.732, p=.093). See table 3 for the descriptive statistics. Almost all DSPs (n=12) use three or more BCTs from the top nine used BCTs. Notable is the use of the BCT 'prompt practice' (BCT 26), which is only used by one DSP supporting people with moderate intellectual disabilities, all of the DSPs supporting people with severe to profound intellectual disabilities used this BCT. Also the BCTs 'graded tasks' and 'model/demonstrate behavior' (BCT 9 and 22) were less used by DSPs supporting people with moderate intellectual disabilities.

For the association between the frequency of the top nine used BCTs and the characteristics of DSPs (gender, education, additional training), no statistically significant differences were found. See table 3 for the descriptive statistics. Correlations (Pearson Correlation and Spearman's rho) were calculated for work experience of DSPs and policies of the organization on the frequency of the top nine used BCTs; no correlations were found.

Table 2 | *Frequency of used Behavior Change Techniques (BCTs) (ranked by used mostly)*

Participants	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**Sum of frequency in use**	**Sum of uniquely used BCTs**
No. of measurements per participant	3	3	2	3	3	3	2	2	3	2	3	3	3	2	1	2	3	3		
BCTs																				
#19[a] Feedback on performance	3	3	2	3	3	2	1	2	3	0	3	2	2	2	1	2	1	0	**35**	**16**
#21 Instructions on how to perform the behavior	3	2	2	3	3	2	2	2	3	2	2	2	0	1	1	2	1	0	**33**	**16**
#22a Doing together	3	1	2	1	3	2	1	1	2	1	2	0	1	0	1	1	1	0	**23**	**15**
#13 Rewards on successful behavior	3	2	2	2	3	2	2	1	3	1	0	0	0	1	1	2	1	0	**26**	**14**
#12 Reward effort towards behavior	2	1	2	0	3	2	2	1	1	0	1	0	0	1	1	2	0	0	**19**	**12**
#24a DSP changes environment	2	1	2	1	2	2	1	0	2	2	0	0	0	1	1	1	0	0	**18**	**12**
#9 Graded tasks	2	3	1	3	1	2	1	1	1	0	1	0	0	0	0	0	2	0	**18**	**11**
#26 Prompt practice	1	2	1	2	3	2	1	2	3	0	0	0	1	0	0	0	0	0	**18**	**10**
#22 Model/ demonstrate behavior	2	0	2	1	1	2	2	0	1	1	0	1	1	0	0	0	0	0	**14**	**10**
#5 Goal setting (behavior)	2	3	2	2	1	2	2	2	0	0	0	0	1	0	0	0	0	0	**17**	**9**
#23 Teach to use prompts/cues	2	0	2	3	2	2	1	2	1	0	0	0	1	0	0	0	0	0	**16**	**9**
#20 Information where and when to perform behavior	2	1	0	2	2	0	1	1	0	1	0	0	1	0	1	0	0	0	**12**	**9**
#11 Review outcome goals	1	0	2	1	2	2	1	1	0	0	0	0	0	1	0	0	0	0	**11**	**8**
#24 Environmental restructuring	2	0	2	0	1	0	1	1	1	0	0	1	0	1	0	0	0	0	**10**	**8**
#7 Action planning	1	2	2	3	0	0	0	0	0	0	2	0	0	0	0	0	1	0	**11**	**6**
#6 Goal setting (outcome)	1	3	2	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	**10**	**6**
#1 Information on consequences in general	1	0	0	0	0	1	0	0	0	2	0	1	0	0	0	0	0	1	**6**	**5**
#38 Time management	1	0	0	0	0	0	0	0	0	2	0	0	0	1	1	0	1	0	**6**	**5**
#4 Normative information others' behavior	0	0	1	0	0	1	0	0	0	1	0	1	0	0	0	0	0	1	**5**	**5**
#40 Stimulate anticipation of future rewards	1	1	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	**5**	**5**
#10 Review behavioral goals	0	0	0	1	3	0	1	1	0	0	0	0	0	0	0	0	0	0	**6**	**4**
#30 Identification as role model	2	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**6**	**4**

Table 2 | *Continued*

Participants	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	Sum of frequency in use	Sum of uniquely used BCTs
BCTs																				
#28 Facilitate social comparison	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	**4**	**4**
#16 Self-monitoring of behavior	1	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**5**	**3**
#2 Information to the individual	1	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	**4**	**3**
#34 Use of imagery	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	**4**	**3**
#8 Barrier identification	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**3**	**3**
#17 Self-monitoring of outcome	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	**3**
#18 Focus on past success	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**3**	**3**
#25 Behavioral contract	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**2**
#15 Generalization of behavior	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**1**
#31 Prompt anticipated regret	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**	**1**
#32 Fear arousal	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**	**1**
#3 Information about others' approval	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#14 Shaping	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#27 Use of follow-up prompts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#29 Plan social support/social change	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#33 Self-talk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#35 Relapse prevention/coping planning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#36 Stress management/ emotional control training	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#37 Motivational interviewing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
#39 General communication skills training	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Sum of used BCTs per DSP	**42**	**35**	**33**	**33**	**35**	**30**	**21**	**20**	**23**	**14**	**14**	**10**	**9**	**9**	**8**	**11**	**8**	**2**	**357**	
Sum of uniquely used BCTs per DSP	**24**	**20**	**20**	**18**	**17**	**17**	**16**	**15**	**13**	**10**	**8**	**8**	**8**	**8**	**8**	**7**	**7**	**2**		**226**

[a]Number of BCT in CALO-RE taxonomy[12]

Table 3 | *Use of top 9 BCTs in relation to characteristics of people with intellectual disabilities and characteristics of DSPs*

	n (DSPs)	Mean	SD
Moderate intellectual disabilities	8	4.8	2.6
Severe to profound intellectual disabilities	5	7.8	2.2
Female DSPs	15	6.4	2.7
Male DSPs	3	6.3	2.5
Education DSPs: Senior secondary vocational education	13	6.9	2.2
Education DSPs: University of applied sciences	5	5.4	3.4
Additional training, no	11	6.2	2.9
Additional training, yes	7	6.9	2.2

Discussion

Principal findings

The aim of this study was to determine the use of BCTs by DSPs in supporting healthy lifestyle behavior for physical activity and nutrition of people with moderate to profound intellectual disabilities. Results show that DSPs use most of the BCTs (33 out of 42 BCTs); however, they rely heavily on only nine of them. More than half of the DSPs use these nine BCTs. These most frequently used BCTs were as follows: 'feedback on performance', 'instructions on how to perform the behavior', 'doing together', 'rewards on successful behavior', 'reward effort towards behavior', 'DSP changes environment', 'graded tasks', 'prompt practice', and 'model/demonstrate behavior'. DSPs who use the most BCTs also utilize more different BCTs then DSPs who use less BCTs. There is a wide variance in uniquely used BCTs between DSPs (range 2-24 BCTs). Nine BCTs were not employed at all. These nine BCTs, for example, 'shaping' and 'relapse prevention/coping planning', are probably difficult to use for people with moderate to profound intellectual disabilities. For example, in 'shaping', the encouragement is being phased out; however, because of the support needed by people with intellectual disabilities[7–9], this encouragement is required. The degree of intellectual disabilities may be related to the use of BCTs, DSPs use more BCTs for people with more severe intellectual disabilities. DSPs of people with more severe intellectual disabilities use three BCTs more often than DSPs supporting people with moderate intellectual disabilities, these BCTs are as follows: 'prompt practice', 'graded tasks' and 'model/demonstrate behavior'. So DSPs who support people with severe to profound intellectual disabilities are more aware of demonstrating, set graded tasks and encourage people with intellectual

disabilities to practice a healthy lifestyle. This encouragement for people with more severe intellectual disabilities could be adapted to care plans and evaluated if this leads to a healthier lifestyle of people with severe to profound intellectual disabilities. No statistical significant differences or correlations were found for the characteristics of DSPs and the use of the top nine BCTs. However, these results should interpreted with caution.

In comparison with an observational study in people with mild intellectual disabilities[20] examining the nine most frequently uniquely used BCTs, in our study, the authors determined three similar BCTs used by DSPs: 'instructions on how to perform the behavior', 'rewards on successful behavior', and 'model/demonstrate behavior'. The BCTs 'set graded tasks' and 'reward effort towards behavior', which were observed in the top nine of this study, were also mentioned as being suitable by professionals working with people with mild intellectual disabilities[17] indicating that these BCTs appear to be applicable for both people with mild intellectual disabilities and people with moderate to profound intellectual disabilities.

Of the five BCTs ('barrier identification', 'set graded tasks', 'reward effort towards behavior', 'motivational interviewing', and 'action planning') that seemed most suitable for supporting people with mild intellectual disabilities[17], only two of them were in the top nine used by DSPs in this observational study ('set graded tasks' and 'reward effort towards behavior'). On the other hand, the BCT 'feedback on performance' was marked as less suitable for people with mild intellectual disabilities[17] while this BCT was at the top list for people with moderate to profound intellectual disabilities. This may indicate that those BCTs that were not used frequently by DSPs may be less suitable for people with moderate to profound intellectual disabilities because of their functioning, for example, on the conceptual domain with impairments in practical knowledge and memory[21]. The level of dependency of people with intellectual disabilities should be taken in to account by using BCTs; people with moderate to profound intellectual disabilities probably require more help and feedback during their performance of behavior. The use of the two BCTs 'doing together' and 'DSP changes environment' in the top nine of mostly used BCTs shows this dependency of people with intellectual disabilities. In addition, taking the social and emotional development of people with intellectual disabilities into account might have led to the use of only nine BCTs[20].

Our study demonstrates that DSPs already used most of the available techniques to motivate a healthy lifestyle; however, they rely heavily on just nine BCTs. Nevertheless, based on this study, the authors do not know if DSPs use the most promising BCTs. Compared to

earlier research in which DSPs indicated they required skills to motivate people with intellectual disabilities for healthy lifestyle behaviors[18], this study shows that they indeed use BCTs. This may indicate that DSPs may be unaware of their use of BCTs for healthy lifestyle behavior and may need additional skills in order to use a variation of them. The use of only nine BCTs can also be an indication for a knowledge gap regarding the availability of BCTs. It is unclear if DSPs use BCTs purposefully and what are the effects; they may use them implicitly which is also known as 'tacit knowledge', which is implicit knowledge based on experience[22,23]. By making this knowledge explicit and sharing it, more DSPs could benefit from this in daily practice and use BCTs to support people with intellectual disabilities. Also, because of the needs of DSPs for motivating skills, raising awareness for the used BCTs can help to overcome this need and make DSPs more confident in supporting healthy lifestyle behaviors.

Methodological considerations

For this study, the CALO-RE-NL taxonomy[12,17] was used and adapted for people with moderate to profound intellectual disabilities. BCTs were already operationalized for people with mild intellectual disabilities[17]; the authors (AO, MW) added suitable examples for people with moderate to profound intellectual disabilities to the list. For example, an adjusted example to 'set graded tasks' was: 'lift your head first, then I will put your arm into the right place and then you can turn around'. In this example, the DSP supported the steps of the task instead of the people with more severe intellectual disabilities doing it all by themselves because thinking of different steps in a task is difficult for this population.

In this study, two additional BCTs were added to the CALO-RE-NL taxonomy[12,17]: 'Doing together' and 'DSP changes environment'. With adding these BCTs, the support needs of people with moderate to profound intellectual disabilities were taken into account for helping them with healthy behavior. These additional BCTs show the specific way in which the use of BCTs should be examined for people with moderate to profound intellectual disabilities and the role of DSPs. Depending on the level of the disability, people with moderate to profound intellectual disabilities require support from others in their daily life[7–9]. In some situations, a DSP or someone else must change the environment to perform the behavior instead of the persons doing this by themselves. Because people with moderate to profound intellectual disabilities were not always capable of performing the behavior on their own, the authors also experienced DSPs performing the target behavior with them instead of doing it by themselves.

Strengths and limitations

This is the first time the actual use of BCTs for people with moderate to profound intellectual disabilities has been explored by recordings. Earlier research of BCTs focused on the general population and people with mild intellectual disabilities[13–15,17]. Objective coding was made possible by recordings instead of self-reported use of BCTs. This is important as limited memory reduces the accuracy of self-reported behavior[24]. Also, unknowingly using BCTs could be coded using the recordings. A study protocol ensured structural data collection for all of the participating DSPs. To exert little influence on regular activities in the observed situation, the recordings were conducted by student interns or an employee of the participating DSP. Finally, the IRR was checked at the beginning and halfway through the procedure of coding which ensures reliable results.

A limitation of this study is the relatively small sample of DSPs (n=18). The results of the used BCTs related to the degree of intellectual disabilities cannot be generalized because of the small sample of people with severe intellectual disabilities within this analysis. More research is needed into the use of specific BCTs for different groups of people with intellectual disabilities and the effectiveness of these BCTs. The results of the relation between the characteristics of DSPs and the use of BCTs should be interpreted with caution, the group of participants is heterogenic with 18 different DSPs, supporting a heterogeneous group of people with intellectual disabilities using nine different BCTs.

Conclusions

DSPs use most of the available BCTs in their support for healthy lifestyle behavior of people with moderate to profound intellectual disabilities; however, they rely heavily on just nine BCTs, and there is a wide variance in uniquely used BCTs between DSPs. To support DSPs in clinical practice, they can use BCTs explicitly to stimulate healthy lifestyle behaviors for people with intellectual disabilities.

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Chapter 4

A questionnaire to measure direct support professionals' attitude towards healthy nutrition of people with intellectual disabilities

Abstract

Background: Direct support professionals'(DSPs) attitudes toward nutrition are important for supporting a healthy lifestyle of persons with intellectual disabilities. However, there are no instruments to measure it. The aim of this study was to compose a questionnaire and determine its internal validity.

Method: The previously validated Health Enhancing Physical Activity questionnaire was adapted into the Attitude of DSPs for Health Enhancing Nutrition (ADSP-HENU) and completed by 31 DSPs. The internal validity of the questionnaire was investigated by Cronbach's Alpha and an exploratory non-parametric item response analysis (NIRT).

Results: The internal consistency by Cronbach's Alpha was good (0.87, 95% CI [0.81-0.94]). NIRT showed monotonicity with wide confidence bounds and sufficient point polyserial correlations of the items. This indicates that each attributes to the overall measured attitude.

Conclusion: The internal validity of the ADSP-HENU is promising, and it can be used in daily practice for evaluation or adapting interventions to DSPs' needs.

Overwijk, A., Krijnen, W.P., Hilgenkamp, T.I.M., Van der Schans, C.P., Van der Putten, A.A.J., & Waninge, A. A questionnaire to measure direct support professionals' attitude towards healthy nutrition of people with intellectual disabilities. *Manuscript under review.*

Background

Individuals with moderate to profound intellectual disabilities who live in residential facilities are highly dependent on their direct support professionals (DSPs) for a healthy lifestyle[1]. Since healthy nutrition and adequate physical activity levels are more challenging for people with moderate, severe, and profound intellectual disabilities compared to the general population[2,3], it appears that the support of DSPs in these areas requires extra attention. Previous research shows, for example, that they are not sufficiently equipped to support a healthy lifestyle and require additional knowledge and skills[4–7]. In addition to these, a positive attitude is needed to implement healthy lifestyle support[8,9].

Attitude can be defined as the thoughts and feelings of DSPs regarding a healthy lifestyle[10]. According to the Theory of Planned Behavior[11], attitude is one of the aspects that determines intentions that subsequently influence the behavior of DSPs regarding healthy lifestyle support[12]. Additionally, the attitude and behavior of DSPs can be influenced by the domains of the Theoretical Domains Framework (TDF)[13,14]. The TDF is a widely used evidence based theoretical framework that provides insights into the domains that require attention to influence behavior[13–16]. For example, the domain "Knowledge" can influence how DSPs think about a healthy lifestyle. The TDF is based on different psychological theories relevant for behavioral change[13]. A validated version of the TDF consists of 14 domains encompassing influences on behavior and particularly on the health domain[14]. Knowledge about attitude can stimulate cooperation in teams of DSPs to improve attitude and thus increase healthy lifestyle support. However, there is a lack of knowledge about the attitude of DSPs.

To evaluate this, a questionnaire was developed focusing on physical activity: the Attitude of DSPs for Health Enhancing Physical Activity (ADSP-HEPA). However, no instrument is available to measure DSPs' attitudes toward healthy nutrition. The ADSP-HEPA may potentially be a valid and reliable instrument in other lifestyle areas. The ADSP-HEPA is a brief, feasible attitude questionnaire that is easy to use in daily practice. It was developed by[10] in two stages. Firstly, it was composed based on literature about the refined TDF[13,14]. All of the items are based on the domains of the refined TDF; these items are changeable determinants. These domains influence DSPs' support of a healthy lifestyle[13,14]. DSPs, for example, require knowledge and skills to support people with moderate to profound intellectual disabilities in living a healthy lifestyle[17]. The original questionnaire is improved through consulting DSPs and researchers with expertise of health promotion for people with intellectual disabilities. Secondly, the most valid and reliable items were preserved on the basis of a confirmatory factor analysis (CFA) and item response analyses. The final version of

the ADSP-HEPA questionnaire consisted of the strongest items of each domain of the TDF contributing to the general concept of attitude[10].

A questionnaire measuring the attitude towards nutrition can be used to develop, improve, and adapt interventions related to the nutrition needs of DSPs and evaluate them. This attention for healthy nutrition of people with intellectual disabilities is needed because of their generally unhealthy diets[3,18] and the consequences of being under- or overweight[19]. For this study, the ADSP-HEPA questionnaire was adapted in consultation with the original authors to the Health Enhancing Nutrition for people with intellectual disabilities (ADSP-HENU). To ensure if it can be used in clinical practice, it is important to investigate its internal validity in terms of internal consistency and the contribution of each item to the total score of the questionnaire. Therefore, the aim of this study was to determine the internal validity of the adapted ADSP for nutrition (ADSP-HENU).

Method

Design

The ADSP-HEPA questionnaire was adapted in consultation with the original authors for Health Enhancing Nutrition for people with intellectual disabilities (ADSP-HENU). It was tested as part of a larger implementation study in which four residential facilities and/or day activity centres from four different care provider organizations were participating.

Participants

DSPs working within four teams participated in the study; they support people with moderate to profound intellectual disabilities (≥18 years). DSPs completed both the ADSP-HEPA and the ADSP-HENU. Only fully completed questionnaires were included in this study; one DSP did not complete it. Informed consent was obtained in the larger implementation study. The Medical Ethical Committee of the University Medical Centre Groningen gave dispensation to conduct this study (study number: 201700164). Participation was voluntary and of no consequence to the work evaluations or rewards of the DSPs, and their answers were analyzed anonymously. A total of 31 DSPs from four different care providers across the Netherlands participated in this study. Table 1 depicts the characteristics of the participating DSPs.

Table 1 | *Characteristics of DSPs (n=31)*

Age in years, mean (SD)	34 (11)
Gender female, n	25
Education, n	
Senior secondary vocational education: Educational theory	11
Senior secondary vocational education: Nursing	2
University of applied sciences: Educational theory	11
University	1
Other:	6
Supplemental lifestyle training, Yes	7
Work setting, n	
Residential facility	11
Day activity centre	5
Combination group	15
Years of experience with people with ID, mean (SD)	11 (10)

Instrument

The psychometric properties of the ADSP-HEPA were examined in a previous study (*n*=195)[10]. A Confirmatory Factor Analysis was performed to investigate the association between domains, the associations of the items with the corresponding underlying factor, and to pre-select items that are sufficiently associated with the factor measuring attitude. This analysis showed that there was one generic factor to measure attitude as the underlying construct with a correlation of 0.90. The Cronbach's Alpha for internal consistency of the questionnaire was 0.71 and acceptable. The Cronbach's Alpha if item deleted varied from 0.65 to 0.70 and was thus "questionable" to "acceptable"[20]. Finally, the non-parametric item response theory (NIRT) showed that all expected scores were monotonically increasing with sufficiently small confidence bounds. The point polyserial correlations were sufficient[10].

Adaptation ADSP-HEPA to ADSP-HENU

First, the first author adapted the ADSP-HEPA in order to measure the attitudes of DSPs for nutrition. This adapted version almost completely corresponds to the original questionnaire except for direct translations of physical activity to nutrition. Therefore, the terms about physical activity were replaced by terms concerning nutrition. For example, the question "*I think I am well aware of the exercise and physical activity recommendations for persons with ID"* was adapted to "*I think I am well aware of the nutrition recommendations for persons with ID"*. This adapted questionnaire closely adhered to the original questionnaire as much as

possible (see Table 2). This version was then adapted in consultation with AW and the original author[10] which led to minor revisions.

Data collection in DSPs

Table 2 demonstrates the resulting attitude questionnaires ADSP-HENU and ADSP-HEPA for DSPs (see also Appendix 2 for the ADSP-HENU). The ADSP-HENU was completed by the 31 recruited DSPs. The attitude questions were answered on a 5-point Likert Scale and ranged from "totally disagree" to "totally agree". A higher sum score indicates a more positive attitude towards a healthy lifestyle.

Table 2 | *Attitude questionnaire for DSPs for Health Enhancing Physical Activity and Nutrition*

Question number and topic	Item (statement about attitude)
ADSP-HEPA*	
1 - Knowledge	I think I am well aware of the exercise and physical activity recommendations for persons with ID.
2 - Skills/Self-efficacy/ Beliefs about capabilities	I think I have enough practical knowledge and skills to set up and carry out physical/moving activities.
3 - Environmental Context and Resources	I think I have enough (game) materials to carry out physical activities.
4 - Social Influences	I feel supported by my superiors/managers when encouraging persons with ID to be enough physically active.
5 - Social/Professional Role and Identity	I believe that being physically active is so important that I will do anything to plan it in the daycare program of persons with ID.
6 - Outcome expectancy/ Beliefs about consequences	I think supporting physical activity is a fun part of my work.
ADSP-HENU**	
1 - Knowledge	I think I am well aware of the nutrition recommendations for persons with ID.
2 - Skills/Self-efficacy/ Beliefs about capabilities	I think I have enough practical knowledge and skills to set up and carry out healthy nutrition activities.
3 - Environmental Context and Resources	I think I have enough (kitchen) materials and healthy products to support healthy nutrition for people with ID.
4 - Social Influences	I feel supported by my superiors/managers when encouraging persons with ID to eat and drink healthily.
5 - Social/Professional Role and Identity	I believe that healthy nutrition is so important that I will do anything to make time for healthy nutrition of persons with ID.
6 - Outcome expectancy/ Beliefs about consequences	I think supporting healthy nutrition is a fun part of my work.

* ADSP-HEPA: Attitude of DSPs for Health Enhancing Physical Activity
** ADSP-HENU: Attitude of DSPs for Health Enhancing Nutrition

Data-analyses

The internal validity of the ASDP-HENU was analyzed using the statistical programming language R[21] and statistical software package SPSS. Cronbach's Alpha was calculated to measure the internal consistency for which coefficients from 0.60 to 0.70 were interpreted as "questionable", 0.70 to 0.80 were interpreted as "acceptable", and >0.80 was interpreted as "good"[20]. The Cronbach's Alpha if item deleted was calculated in order to indicate the contribution of each item to the questionnaire. Additionally, the internal validity of the questionnaire was analyzed with the NIRT[22] using point-serial correlations and monotonicity. As these are correlations between items and a latent trait, we adopted the nomenclature for interpreting factor loadings as follows: correlations <0.40 were weak, 0.40-0.60 were moderate, and ≥0.60 were strong[23]. These analyses were supportive to the descriptive representation of the way in which item scores were associated with the underlying construct of attitude given the relatively small sample size.

Results

Internal validity of ADSP-HENU

The Alpha coefficient for the ADSP-HENU was 0.87 (95% CI [0.81-0.94]). Taking the confidence intervals (CI) into account, Alpha was sufficient. The reliability of the ADSP-HENU scale was good; when one item was deleted from the questionnaire, the Alpha coefficient did not increase (see Table 3).

All detailed item characteristic curves presented in the Appendix give the expected item versus expected total attitude scores together with their smoothened spline NIRT item curves. The latter reveal that the item category scores do monotonically increase with the attitude scale (see Appendix 1)[22,24,25]. Its 95 percent confidence bounds were somewhat wide. The figures demonstrate that, on average, DSPs who have low expected total scores tend to score low on an item whereas DSPs who have high expected total scores tend to score high on an item. The point polyserial correlations (loadings) between the attitude latent trait, and the items were all ascertained to be strong (see Table 3)[23].

Table 3 | *Cronbach's Alpha if item deleted and point polyserial correlations for ADSP-HENU*

	Cronbach's Alpha if item deleted	Point polyserial correlation
1 - Knowledge	0.86	0.78
2 - Skills/Self-efficacy/Beliefs about capabilities	0.83	0.89
3 - Environmental Context and Resources	0.87	0.67
4 - Social Influences	0.85	0.81
5 - Social/Professional Role and Identity	0.85	0.79
6 - Outcome expectancy/Beliefs about consequences	0.86	0.77

Discussion

Principal findings

The aim of this study was to determine the internal validity of the adapted ADSP for nutrition (ADSP-HENU). Results indicate adequate internal validity of the ADSP-HENU; the Alpha coefficient for internal consistency was good. NIRT shows that the expected item scores are monotonically increasing with the expected total scores, indicating that each item attributes to the overall attitude that is measured. The wide confidence bounds in the NIRT can be due to the relatively small sample size, therefore, these results are supportive. Despite the small sample size, the current data provide promising results on the reliability of the ADSP-HENU. In comparison with the larger study of the ADSP-HEPA, the Cronbach's Alpha for physical activity was acceptable for the six items, and the NIRT for physical activity shows monotonicity with small confidence bounds[10]. Therefore, both questionnaires are reliable measures for DSPs' attitudes toward physical activity and nutrition[10].

The ADSP-HENU is a brief attitude questionnaire that is easy to use in daily practice, for example, before and after education to evaluate attitude over time. This questionnaire can be used in combination with the ADSP-HEPA to gather knowledge about the needed attention to the concepts physical activity and nutrition in an intervention. In addition, each question on it represents a domain of the TDF which provides additional knowledge about which domain(s) requires specific attention regarding attitudes. For the two concepts, physical activity and nutrition, the attitude questionnaire shows good reliability. It can likely be used for other healthy lifestyle concepts as well such as smoking, alcohol use, and relaxation. To influence the attitudes of DSPs, following additional training on healthy lifestyles is important[10,26]. A positive attitude of DSPs towards healthy lifestyles is a condition for actual implementation of healthy lifestyle behaviour[8,9].

Strengths and limitations

A strength of this study is that it provides a first evaluation of the internal validity of a feasible instrument to measure attitudes of DSPs in the domain of healthy nutrition. A limitation is the relatively small sample size, therefore, the NIRT was supportive in the analysis of the internal validity of the questionnaire. These above results may therefore be interpreted as somewhat preliminary but nevertheless promising. However, it may be noted that small sample sizes are relatively common in research for people with moderate to profound ID[27,28]. Despite this, rigour statistical analyses could be performed with the NIRT with promising results. In addition, the ADSP-HENU was theoretically based on an existing questionnaire that was developed within a study with a large sample size[10].

Implications

Attitude questionnaires can be used to evaluate interventions related to a healthy lifestyle and to adapt interventions to the needs of DSPs. Further research should confirm the psychometric properties of the ADSP-HENU. As such, it would cover a larger part of the domain of scores and make confidence intervals smaller in size. Additionally, for further research, the current basic concept underlying the construction of the attitude questionnaire may be explored for other healthy lifestyle domains, for example, for the attitude of DSPs towards smoking.

Conclusion

This study resulted in a feasible questionnaire to measure DSPs' attitudes related to health enhancing nutrition. This study showed the ADSP-HENU is a promising instrument with favorable internal validity to use for nutrition attitude measurements, and it is easy to use in daily practice for evaluation and to develop, improve, or adapt interventions to DSPs' needs.

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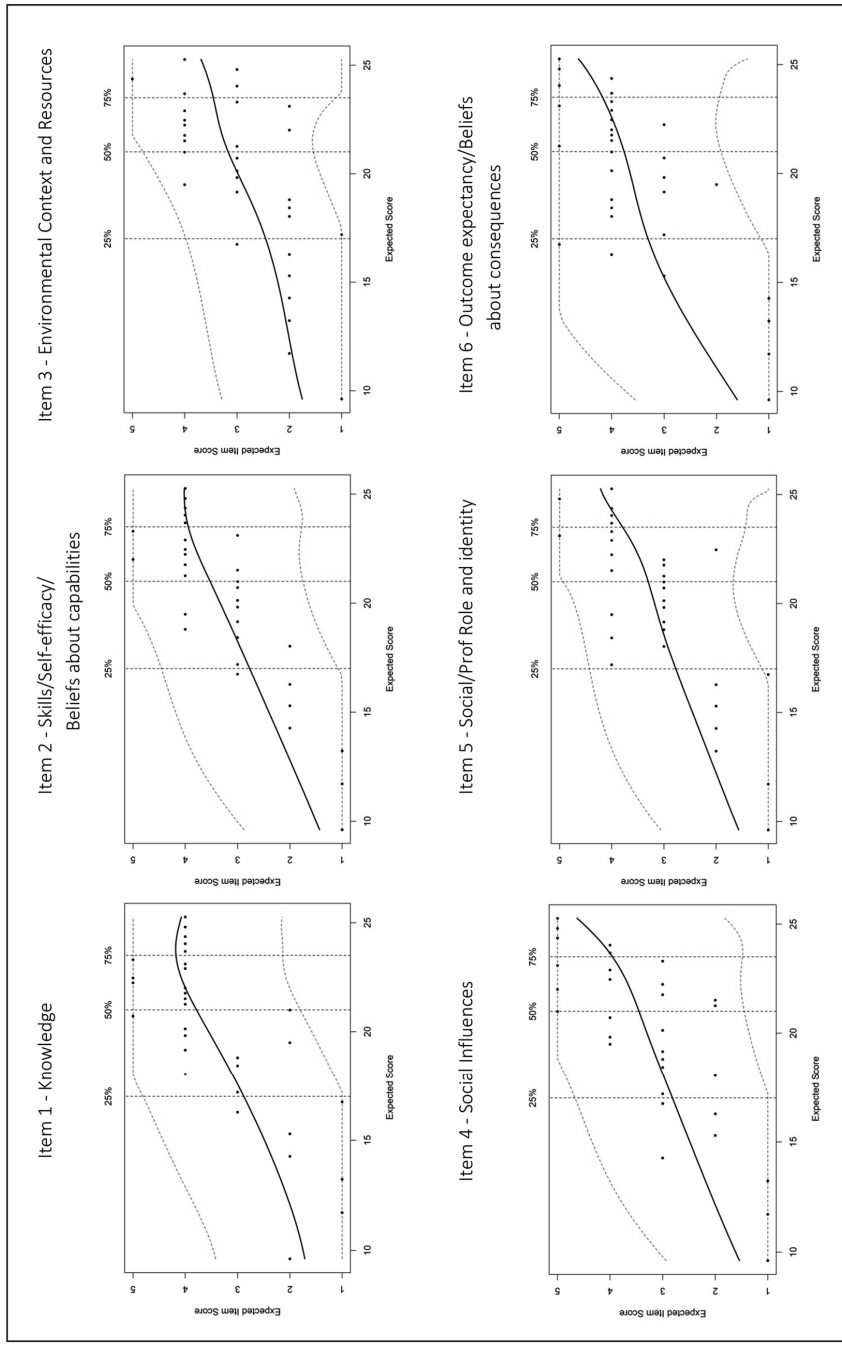
Appendix 1

Expected attitude scores per item on nutrition with 95% confidence bounds.



Appendix 2

Questionnaire evaluating Attitude of Direct Support Professionals towards health enhancing nutrition of people with intellectual disabilities (ADSP-HENU)

Aim:	This six-item questionnaire measures how Direct Support Professionals think about stimulating and motivating of healthiness of nutrition of the persons with intellectual disabilities they support.
Target group:	Direct support professionals of people with intellectual disabilities in daily care.
Instructions for participant:	This questionnaire consists of various statements about how you think and feel about stimulating and motivating healthy nutrition of people with ID you support. The items are about your own feeling or opinion, so your answers are not right or wrong. Completing the questionnaire takes about 2 minutes.
Scoring:	You can score on the following 6 items/statement with: "totally disagree", "partly disagree", "neutral", "partly agree", and "totally agree"

Items (statements about attitude)

	1 Totally disagree	2 Partially disagree	3 Neutral	4 Partially agree	5 Totally agree
I think I am well aware of the nutrition recommendations for persons with intellectual disabilities.					
I think I have enough practical knowledge and skills to set up and carry out healthy nutrition activities.					
I think I have enough (kitchen) materials and healthy products to support healthy nutrition for people with intellectual disabilities.					
I feel supported by my superiors/managers when encouraging persons with intellectual disabilities to eat and drink healthily.					
I believe that healthy nutrition is so important that I will do anything to make time for healthy nutrition of persons with intellectual disabilities.					
I think supporting healthy nutrition is a fun part of my work.					

Instructions for the researcher:
After completing the questionnaire by a direct support professional, the sum score can be calculated by adding all six scores.

Attitude sum score:*

**The minimum possible attitude sum score is 6, the maximum score is 30. The higher the attitude sum score, the more positive caregivers think about stimulating and motivating of healthy nutrition for people with intellectual disabilities they support.*

Chapter 5

Development of a Dutch training/education program for a healthy lifestyle of people with intellectual disability

Abstract

Background: Individuals with intellectual disability (ID) need support from direct support professionals (DSPs) to engage in a healthy lifestyle. However, literature shows DSPs feel insufficiently equipped to support a healthy lifestyle. Therefore, the aim of this study is to develop a theory-based program for DSPs to support physical activity and healthy nutrition for people with moderate to profound levels of ID, and to design its evaluation.

Method and design: The Intervention Mapping Protocol (IM) was followed to develop a theory-based program for DSPs. The program evaluation consists of process and feasibility evaluations.

Conclusion: This study provided a theory-based program consisting of a training and education section with online and face-to-face components to support DSPs in promoting health for people with ID.

Overwijk, A., Hilgenkamp, T.I.M., Van der Schans, C.P., Van der Putten, A.A.J., & Waninge, A. Development of a Dutch training/education program for a healthy lifestyle of people with intellectual disability. *Intellectual and Developmental Disabilities*. 2022; *60*(2).

Background

People with intellectual disability (ID) experience limitations both in intellectual and adaptive functioning, in the following domains: conceptual, social, and practical adaptive skills. Nowadays people with ID are classified according to their support needs using a four-level system: mild, moderate, severe, and profound. This attention for the support needs focuses on the capacity and development of people with ID. The support needs of people with moderate to profound levels of ID experience gives a comprehensive understanding of the degree of ID[1]. People with moderate to profound levels of ID need encouragement in several domains, such as language, motor skills, sensory, and activities for daily living[1,2].

People with ID often exhibit physical inactivity[3–5] and unhealthy food consumption[6]. This unhealthy lifestyle causes health issues such as obesity[3] and cardiovascular risks[3,7], and may have negative impact on quality of life and participation[8,9]. Additionally, people with moderate to profound levels of ID experience limitations in several other domains and need support in activities for daily living. As a consequence, they are more at risk for an unhealthy lifestyle because of their disabilities[10]. Individuals with moderate to profound levels of ID who are living in residential facilities and/or participate in day activity centers require support from direct support professionals (DSPs) to optimize physical activity and healthy nutrition. DSPs play a significant role in providing a health-supporting environment for this population[11].

Despite the importance of DSPs in health support, they indicate that they are not sufficiently equipped and require additional knowledge and skills[12–15]. Therefore, it is necessary to tailor to the needs regarding competencies of DSPs and focus on the required determinants in order to change their behavior[16]. Theory-based interventions can be beneficial for DSPs and are more likely to help them succeed, as shown in the general population[17–19]. However, theory-based interventions tailored to DSPs to support people with ID are scarce[20,21]. To develop theory-based interventions, the Intervention Mapping Protocol (IM)[16] can be utilized as a systematic approach to guide the process of development. To meet the need for theory-based interventions based on relevant determinants, the aim of this study is to develop a program for DSPs to support physical activity and healthy nutrition for people with moderate to profound levels of ID and to design its evaluation.

Method and design

The IM was followed in order to develop the intervention[16,22] focused on DSPs who support people with moderate to profound levels of ID. IM consists of six increments: (1) needs assessment, (2) program objectives, (3) theory-based strategies, (4) program plan, (5) implementation, and (6) evaluation[16]. These increments are described in the following paragraphs.

Needs assessment

Describing the needs of DSPs who support people with ID, literature and results from two previous studies were utilized by the authors.

Literature research shows first that it is important to focus on healthy lifestyle interventions for people with moderate to profound levels of ID. People with moderate to profound levels of ID often do not have a healthy lifestyle regarding physical activity and healthy nutrition[5,23,24], they have obesity or malnutrition[3,6,25] and more health problems[26,27], like diabetes and hypertension[7,28]. Second, literature shows that the focus of these interventions should be on DSPs of people with moderate to profound levels of ID[11,29], because of the support they provide in daily life for healthy lifestyle behavior.

In addition to the literature research, results of an interview study conducted by the authors demonstrated that the following five domains were most frequently mentioned by DSPs as support needs: (1) Environmental Context and Resources, (2) Social/Professional Role and Identity, (3) Social influences, (4) Skills, and (5) Knowledge[34]. DSPs indicated the following specific support needs within these domains: (1) dealing with the different seasons and having the time to support physical activity and healthy nutrition, (2) addressing norm/values and the autonomy of those individuals with ID, (3) social support from family/parents/others and working together with colleagues, (4) competence/skills to motivate people with ID and correlate this with their individual needs, and (5) knowledge about physical activity and nutrition specific guidelines for people with ID. The DSPs, who have an important influence on the healthy life of people with ID, are not sufficiently equipped to support them: DSPs need skills, knowledge, and confidence for supporting a healthy lifestyle[11,30]. In this previous study, DSPs indicated that the program should focus on all three elements in terms of Capability, Opportunity and Motivation (COM-B system in the Behavior Change Wheel) with the following five determinants: Knowledge and Skills (Capability); Social Influences, Environmental Context, and Resources (Opportunity); and Social/Professional Role and Identity (Motivation). In the COM-B system, capability is defined as the person's

psychological and physical capacity to perform an activity; opportunities are external factors outside the individual that influence the performed behavior; and motivation is the process that energizes and directs a person's behavior[31]. The second study revealed information about the current use of Behavior Change Techniques (BCTs)[32] in daily practice to support a healthy lifestyle[33]. This observation study indicated that DSPs employ BCTs in daily practice. Nevertheless, DSPs indicated that they lack skills to motivate and encourage people with ID[34]. Because of the support need of DSPs, awareness of the use of BCTs would be necessary to overcome this need and make DSPs more confident to motivate people with ID.

In addition, DSPs were asked about the desired mode of delivery of the program. According to them, they prefer a team program that is tailored to the population with which they work. They also suggest involving experts who have experience with people with ID to deliver the program. In addition, an interactive practical approach for the program would be important (e.g., with example cases and short videos). Furthermore, the program should have a sustainable character. Final points of attention would be a positive approach and minimal time investment.

Program objectives

The overall program objective was formulated as supporting DSPs in terms of the skills required to be able to encourage people with moderate to profound levels of ID to engage in physical activity and healthy nutrition. In order to achieve the program objective, the program was focused on the five domains that emerged from the needs assessment as described in the first step of IM[33,34] and on changeable determinants focused on DSPs. Table 1 provides an overview of the theory and the support needs that are components of the program. The program focused on improving Capability (Knowledge and Skills), Opportunity (Social Influences, and Environmental Context, and Resources), and Motivation (Social/Professional Role and Identity) of DSPs[31].

The performance objectives were composed based on the program components. Change objectives were subsequently formulated to show what participants need to learn or change in order to achieve the performance objective. Table 2 depicts an overview of the performance and change objectives.

Table 1 | *Overview of theory and needs assessment/program components*

Behavior Change Wheel's COM-B system in relation to Theoretical Domains Framework determinants			Support needs from Direct Support Professionals/program components
Capability	Psychological	Knowledge	X
		Skills	X
		Memory, Attention and Decision processes	
		Behavioral regulation	
	Physical	Skills	X
Opportunity	Social	Social Influences	X
	Physical	Environmental Context and Resources	X
Motivation	Reflective	Social/Professional Role and Identity	X
		Beliefs about Capabilities	
		Optimism	
		Beliefs about Consequences	
		Intentions	
		Goals	
	Automatic	Social/Professional Role and Identity	X
		Optimism	
		Reinforcement	
		Emotion	

In order to meet the performance objectives, six BCTs[33,35] were selected. Three BCTs were indicated in earlier research as being applicable for people with a mild level of ID (BCT 9: set graded tasks, 12: prompt rewards contingent on effort or progress towards behavior, 26: prompt practice)[35]; two BCTs were most frequently employed by DSPs (BCT 19: provide feedback on performance, 21: provide instruction on how to perform the behavior)[33]; and one BCT (BCT 24a: environmental restructuring) was added specifically for individuals with severe to profound levels of ID[33]. The selected BCTs for the program are accommodated in the 'Skills' determinant of the program.

Table 2 | *COM-B component, Determinants, Performance objectives, Change objectives and Practical strategies*

COM-B component	Determinants	Performance objectives	Change objectives	Practical strategies
Opportunity	Environmental Context and Resources	-Direct Support Professionals (DSPs) pay attention to the available tools and time within the environment in order to support healthy food consumption and physical activity.	-The DSP can picture a situation in daily practice where he/she can pay attention to nutrition and physical activity.	Discussing example cases from daily practice with attention for experiencing, reflecting, thinking, and acting. Attention will be paid to: difficulties in practice, exchange expertise, practice, and sustainable attention for the topic. There will be application in daily practice with practical assignments.
	Social Influences	-DSPs use support (when possible) from family/parents/ others for a healthier lifestyle for people with ID.	-The DSP knows an example situation in which he/she can use support from family/parents/others for a healthy lifestyle. -DSPs work together for a better lifestyle (nutrition/physical activity) for people with ID.	
Motivation	Social/Professional Role and Identity	-DSPs are aware of their professional role regarding a healthy lifestyle and the provided support to people with ID.	-DSPs are aware of their own norms and values and the norms and values of colleagues and are aware of the autonomy of people with ID in relation to nutrition and physical activity and the influence of norms and values on the given support.	
Capability	Skills	-DSPs motivate/stimulate people with ID to eat healthy and perform physical activities by using Behavior Change Techniques (BCTs) and thereby satisfy the needs of people with ID.	-The DSP is able to use one BCT and knows a situation in which he/she can apply it.	

Table 2 | *Continued*

COM-B component	Determinants	Performance objectives	Change objectives	Practical strategies
Capability	Knowledge	-DSPs have knowledge about a healthy lifestyle for people with ID.	-DSPs have knowledge about healthy nutrition and the possible meaning of physical activity for people with moderate to profound levels of ID. -DSPs know physical activities for people with moderate to profound levels of ID. -DSPs know the benefits of healthy nutrition and physical activity for people with moderate to profound levels of ID. -DSPs know practical tips (for example, how to stimulate/motivate people with ID) and recognize possibilities for healthy nutrition and physical activity for people with moderate to profound levels of ID.	Online information about healthy nutrition and physical activity for people with moderate to profound levels of ID. This information will be tailored by filling in characteristics of persons with moderate or severe to profound levels of ID from the own daily practice.

Theory-based strategies

As described in the previous paragraphs, the content of this theory-based program was based on the Theoretical Domains Framework (TDF), related to the COM-B system[31,36], and BCTs[32]. To improve the support of DSPs, they have to change their behavior. The TDF and COM-B system are evidence-based methods to change professional support[37]. The domains of the TDF are related to the COM-B system, a complementary theory for changing behavior with three components (Capability, Opportunity, and Motivation). This system is designed to understand interlocking determinants of behavior in order to devise theory-based interventions[31]. This theoretical system supports intervention development by selecting the components that are required for behavior change in order to achieve the goals of the intervention. From the needs assessment, all three parts of the COM-B system were addressed to change the behavior of DSPs. Therefore, the program focuses on the capacity of DSPs, external factors outside the DSPs, and the motivation of DSPs in order to achieve the program goal. BCTs were used in the TDF skills component, whereas DSPs mentioned the need for motivating people with ID to engage in healthy lifestyle behavior. These BCTs can be employed to support a healthy lifestyle[32].

Due to the educational character of the intervention, the mode of delivery of the program was based on Kolb's theory of learning styles in order to modify the targeted determinants and effective learning of DSPs. Kolb's theory connects the learning style of the DSPs to their daily practice and encourages students' active participation with the following cycle: experiencing in practice, reflecting on the process, thinking about relations in acting, and acting in practice. These learning styles were validated and applied in several studies in diverse fields[38,39]. According to Kolb and Kolb[39], knowledge is gained from experience. DSPs are able to learn new things related to the program components from what they experience in daily practice. Therefore, learning in practice, knowledge exchange, and online components were important for the development of the program. Informal learning in networks[40] appeared in the program from co-creation on the work floor. DSPs discussed daily issues, gathered new ideas from colleagues in informal talks, and were prompted by other colleagues to learn about interesting new developments. This is referred to as social learning, i.e., a method of informal learning in which social networks are used to gather new knowledge[40]. Important assumptions in the development of the program included working cohesively in learning networks, formal and informal learning, leadership, and reflection of the learning process. Table 2 provides an overview of the change objectives and practical strategies of the program related to the determinants.

Program plan

The five determinants from the needs assessment were the foundation of the program plan. One of these five determinants (Knowledge) was transferred online. The remaining four determinants (Social/Professional Role and Identity, Skills, Social Influences, and Environmental Context and Resources) were addressed in three face-to-face sessions. The mode of delivery of the program was based on the needs assessment where DSPs indicated they prefer an interactive team program with experts. Because of the practical feasibility of the program (time investment), the knowledge component was offered online. The components of the program for DSPs were as follows:

1. An e-learning module to increase knowledge and awareness of physical activity and healthy nutrition for people with moderate to profound ID.
2. Three sessions of two hours each with the following themes:
    - Social/Professional Role and Identity
    - Skills (BCTs)
    - Social Influences, and Environmental Context, and Resources

The content of the program was developed based on the needs assessment from this study and the Dutch guidelines for physical activity and healthy nutrition[41–44]. During the face-to-face sessions, DSPs brought in their own example cases and emphasis was placed on structural attention of lifestyle and sustainability. The face-to-face sessions were performed by two trainers, of which one trainer from the location where the program was implemented. See Table 3 for the preparation and content of the program. In order to transfer the experience from the program to daily practice, DSPs conducted practical assignments between the sessions within the team in which they reflected on specific situations and their performance, discussed the situation with a colleague, thought about what they wanted to change in the situation, and experimented with the new behavior in practice.

In order to facilitate factors improving feasibility and connection to daily practice, the ideas of experts were collected during the program development. The first author made the first draft of the program and was provided with feedback several times by the research team via e-mail and in-person, people with ID and their proxies in-person, allied health care professionals via e-mail, DSPs via e-mail and in-person, students in-person, and teachers from the university of applied sciences and from senior secondary vocational education via e-mail and in-person. In an early stage, the following experts contributed to the development of the program: behavioral scientists (*n*=2), physiotherapists (*n*=2), professionals in movement education (*n*=3), dieticians (*n*=3), and a speech therapist (*n*=1). These experts checked the

program components. The content of the e-learning was developed in collaboration with a physiotherapist (*n*=1), professionals in movement education (*n*=3), dieticians (*n*=4), and speech therapists (*n*=2). The program manual was written in collaboration with education developers and a trainer/coach experienced in motivating within the priority population. Furthermore, a group discussion with people with ID and their proxies was held to adapt the program to daily practice. Additionally, during the development of the e-learning, DSPs (who did not receive the program), students, and a teacher of senior secondary vocational education were invited to provide feedback at three different times. A trainer/coach experienced in motivating within the priority population also offered feedback on the e-learning at the third feedback moment. The feedback was focused on linking and testing scientific and practical knowledge of the program[45].

Table 3 | *Detailed description of the program for Direct Support Professionals*

Theoretical strategy of session	Structure and description of the program		
	Session 1*: Social/Professional Role and Identity/ Autonomy of people with ID	Session 2: Skills (Behavior Change Techniques; BCTs)	Session 3: Social Influences, and Environmental Context, and Resources
Experience Reflecting Thinking	e-learning module: -Knowledge about healthy nutrition and physical activity for people with moderate to profound levels of ID with interactive assignments[41–44] -Additional tips, for example for recipes or physical activities for the target group -BCTs for motivating people with ID - Short assignments (to take to the training session) about the first steps to change in daily practice Preparation of Direct Support Professionals (DSPs) for the session: -Thinking about your own base for supporting people with ID -Reading: 10 professional dilemmas -Discussing the goal for the team -Choosing example cases related to the theme	Preparation of DSPs for the session: -Looking back at the e-learning for using BCTs -Discussing the goal for the team -Choosing example cases related to the theme	Preparation of DSPs for the session: -Discussing the goal for the team -Choosing example cases related to the theme
Reflecting Experience Reflecting Thinking	Introduction Feedback e-learning Set goal for team based on the theme Example cases from the team	Introduction Feedback assignment 1 Set goal for team based on the theme -Video with BCTs -Example cases from the team	Introduction Feedback assignment 2 Set goal for team based on the theme -Video with environmental context and resources -Example cases from the team

Table 3 | *Continued*

	Session 1	Session 2	Session 3
Reflecting Thinking	Linking theme to example cases: What are the own norms/values in relation to the person with ID?	Linking theme to example cases: Applying BCTs. Does this also align with what the person with ID wants and can do?	Linking theme to example cases: How to use environmental context, resources and social environment (e.g. involving family/relatives)? What does the person with ID want and how do you align with what he/she can?
Experience Reflecting Thinking	Exchange experience	Exchange experience	Exchange experience
Reflecting Thinking	Thinking and talking about: What do you encounter as a DSP when it comes to nutrition/physical activity, what gives you pause and how do you approach such a situation? -Role of autonomy of people with ID -Alignment with norms/values of people with ID, their wishes regarding healthy living, and support needs		Thinking and talking about: What do you encounter as a DSP when it comes to nutrition/physical activity, what gives you pause and how do you approach such a situation?
Acting		Role play: practice with BCTs for people with ID	
Maintenance	Working together as a team for healthy lifestyle	Working together as a team for healthy lifestyle	Working together as a team for healthy lifestyle
Maintenance	Continuing attention for this theme and healthy lifestyle	Continuing attention for this theme and healthy lifestyle	Continuing attention for this theme and healthy lifestyle
Maintenance	Closing session: What do you take from this session to daily practice?	Closing session: What do you take from this session to daily practice?	Closing session: What do you take from this session to daily practice?
Experience Reflecting Thinking Acting	Assignment 1	Assignment 2	Assignment 3

*The topics of the training sessions are based on the Theoretical Domains Framework[31,36].

Implementation

Within collaboration between care providers for people with ID, managers selected four teams to participate in the program that included two teams in the north and two in the center of the Netherlands (DSPs: *n*=32, people with ID: *n*=24). Two teams were employed at living facilities, one at a day activity centre, and one in a setting in which living and day activities are integrated for people with moderate to profound levels of ID. Three teams worked at a residential facility, and one team was located in a small community home. All of the teams had one contact person (a team member or coordinator of the team) to plan the program components for the team.

For a successful implementation of the program, various stakeholders (e.g., DSPs, the trainers, educationalists, and experts) were involved during the program and its development. This involvement of stakeholders created a connection to daily practice and the implementation context. The e-learning was implemented in collaboration with the technical staff of the involved care providers. Prior to beginning the face-to-face sessions, a joint meeting with the trainers was held to coordinate the sessions. Subsequent to each session, brief contact occurred with the trainers regarding the course. The first author was also present at one face-to-face session of each team. During the sessions, the author observed whether the meetings were conducted as intended. Before and during the program, the implementation was discussed with the managers and contact persons of the involved care providers.

Evaluation

The evaluation consists of process[46] and feasibility evaluations[47]. A mixed method design will be utilized to conduct the evaluations.

Process

In the process evaluation, the following components will be reported: context, reach, dose delivered, dose received, fidelity, and recruitment, according to Linnan and Steckler[46].

Feasibility

The feasibility objectives are the following: evaluation of recruitment capacity, evaluation of data collection process, acceptability/suitability of the program, implementation, and the preliminary results[47] (see Figure 1).

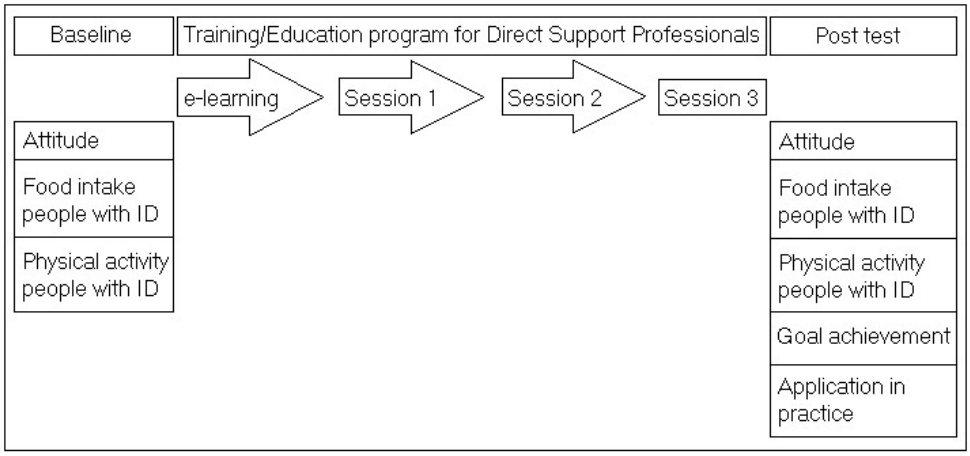


Figure 1 | *Design for preliminary results*

The primary outcomes (which are part of the preliminary results of the feasibility study) are the influence of the program on the DSPs (*n*=32) measured by the attitude, goal achievement (performance and change objectives), and application in practice (performance and change objectives). The attitude of DSPs will be measured at baseline, one week after, and again three months after the last program session with an attitude questionnaire[48]. This attitude questionnaire consists of six items where DSPs can reflect on their Capability (Knowledge and Skills), Opportunity (Social Influences, and Environmental Context, and Resources), and Motivation (Social/Professional Role and Identity) for supporting a healthy lifestyle of people with ID, which is the program objective. The goal achievement of the program will be measured one week after the last program session with a questionnaire for DSPs, and the trainers will reflect on the goal achievement after each session. The application in practice will be measured during the program with practical assignments and then three months after the program with interviews with DSPs. There will also be a questionnaire for managers of the participating teams one week after the program. The first author checked the fidelity of the program by attending one session at each care provider.

Secondary outcome measurements of the preliminary results are the level of physical activity and the food intake of people with moderate to profound levels of ID (*n*=24). Physical activity will be measured with the Actigraph[49,50] for walking respondents and the Actiwatch[51] for non-walking respondents. Additionally, DSPs will record the planned movement activities during the measurements of physical activity. Food intake will be measured with food diaries for three days[52]. Food intake and physical activity of people with ID will be measured at baseline and after three months following the last program session.

Planned analysis preliminary results

The attitude of DSPs at baseline, one week after the program, and three months after the program will be compared. To what extent the goals of the program have been achieved will be reported on a scale from 0 to 5. During the program, the practical assignments of DSPs will be evaluated on quality. A questionnaire completed by the managers of the participating teams will be analyzed regarding if support was provided for a healthy lifestyle from DSPs in daily practice. In addition, interviews with DSPs will be analyzed with a conventional content analysis[53] regarding the manner in which the information learned from the program was applied in daily practice.

A number of comparisons will be made for this study of people with ID. Food diaries before and after the program will be compared with the national health guidelines. The level of activity of people with moderate to profound levels of ID will be compared before and after the program. In addition, the number of planned movement activities in daily programs will be compared.

Discussion

This study resulted in a theory-based program consisting of a training and education section for DSPs to support physical activity and healthy nutrition for people with moderate to profound ID, and a design of its evaluation. DSPs were provided with knowledge, theory, and suggestions for skills about physical activity and healthy nutrition for this population in an online learning module. In three face-to-face sessions, the following components were discussed: (1) Social/Professional Role and Identity; (2) Skills: Behavioral Change Techniques; (3) Social Influences and the Environmental Context and Resources. These sessions were focused on behavioral change and collaboration in daily practice. The program can be individually adapted to the learning needs of DSPs and the persons with ID that they support.

IM guided the development of this theory-based program. This protocol was helpful for organizing and carefully taking the steps to develop an intervention and making this development transparent. The IM protocol was also used by other researchers to develop interventions[22,54]; these studies can be an example for developing more theory-driven interventions in a transparent manner. The involvement of stakeholders to keep the intervention feasible for daily practice is a strength in the developing process for applying the intervention. Besides IM, another framework for developing interventions, the Behavior Change Wheel[55], was considered for use because it is in line with the theoretic approach of

the TDF. Although the steps in both frameworks are very similar, IM has a longer scientific history and is a more practical instrument guiding through the development steps; therefore, we opted for IM.

The content of this program is theoretically based by employing domains from the TDF, related to the COM-B system[31] and BCTs for DSPs[32], because behavior is related to different influencing factors. The BCTs were particularly used by DSPs to motivate people with ID, because of the needs they indicated to do so. Due to the educational character of this intervention, to change the behavior of DSPs, Kolb's theory[39] was adapted for the mode of delivery of the program. In this way, each aspect of the program was supported by the best suitable theoretical basis.

This program consisting of a training and education section is the first theory-based intervention for DSPs tailored to people with moderate to profound levels of ID. This program provides what is lacking from the theory-based interventions for DSPs and for people with ID to promote a healthy lifestyle[20,21]. An important element in the program is the focus on physical activity and healthy nutrition whereas, previously, most interventions in daily practice focused only on physical activity[20]. Furthermore, this program is the first to use BCTs for people with moderate to profound levels of ID. With this inclusion, the usability of BCTs in this population can be further explored.

A strength of this study is the close collaboration with daily practice, which facilitated its implementation and adoption in order to contribute to a healthy lifestyle of people with ID[16]. This collaboration however can also be a limitation, because there may be a certain degree of subjectivity and projection from an individual's daily practice. As a consequence, the balance between an optimal program on one side, and feasibility in practice on the other, may have shifted to practice, whereby for example a smaller number of sessions with shorter duration was chosen. However, we have tried to overcome this possible limitation by the involvement of various experts and DSPs from several care providers. For further evidence, this program requires a process evaluation and a feasibility study.

Conclusion

In conclusion, this study provided a theory-based program consisting of a training and education section with online and face-to-face components, to support DSPs in promoting health for people with moderate to profound levels of ID. The program can be individually adapted to the learning needs of DSPs and the persons with ID who they support. The next step will be to execute the process and feasibility evaluations of the program.

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Chapter 6

Implementation of a program to support direct support professionals to promote a healthy lifestyle for people with moderate to profound intellectual disabilities

Abstract

Background: There is a lack of theory-based interventions for direct support professionals (DSPs) to support a healthy lifestyle for people with moderate to profound intellectual disabilities (ID) despite their major role in this. This study aims to evaluate the preparation, implementation, and preliminary outcomes of a theory-based training and education program for DSPs to learn how to support these individuals.

Methods: The program consisting of e-learning, three in-person sessions, and three assignments was implemented. The implementation process was evaluated with a mixed method design with the following components: preparation phase, implementation phase, and the outcomes. These components were measured with project notes, questionnaires, interviews, reflections, assignments, food diaries, Actigraph/ Actiwatch, and an inventory of daily activities.

Results: Regarding the preparation phase, enough potential participants met the inclusion criteria and the time to recruit the participants was nine months. The program was implemented in four (residential) facilities and involved individuals with moderate to profound ID (n=24) and DSPs (n=32). The e-learning was completed by 81% of the DSPs, 72-88% attended the in-person sessions, and 34-47% completed the assignments. Overall, the fidelity of the program was good. DSPs would recommend the program, although they were either negative or positive about the time investment. Mutual agreement on expectations were important for the acceptability and suitability of the program. For the outcomes, the goals of the program were achieved, and the attitudes of DSPs towards a healthy lifestyle were improved after three months of the program (nutrition: p=<0.01; physical activity: p=0.04). A statistically significant improvement was found for food intake of people with ID (p=0.047); for physical activity, no statistically significant differences were determined.

Conclusions: The theory-based program consisting of a training and education section for DSPs to support a healthy lifestyle for people with moderate to profound ID was feasible to implement and, despite some barriers regarding time capacity and mutual expectations, it delivered positive changes in both persons with moderate to profound ID and DSPs. Thus, the program is a promising intervention to support DSPs.

Overwijk, A., Hilgenkamp, T.I.M., Van der Schans, C.P., Krijnen, W.P., Vlot-van Anrooij, K., Van der Putten, A.A.J., Waninge, A. Implementation of a program to support direct support professionals to promote a healthy lifestyle for people with moderate to profound intellectual disabilities. *BMC Health Services Research*. 2022; *22*(15). doi: 10.1186/s12913-021-07389-x

Background

People with moderate to profound intellectual disabilities (ID) often do not have a healthy lifestyle[1–4] with regard to physical activity and healthy nutrition[5,6]. These individuals often have low levels of physical activities and an unhealthy diet[2,6]. Consequently, people with moderate to profound ID have a higher prevalence for health problems like constipation and being under- or overweight[7]. Severe motor disabilities as an example of prevalent health problems are also barriers for physical activity participation of people with ID. Other barriers are related to individual motivation and preferences; support on financial level, transportation and staffing levels. Facilitators for physical activity are for example social interaction and engagement, rewarding's, and having fun[8]. People with moderate to profound ID require support from their social environment in performing their daily activities and thus to live healthily. In the Netherlands, this support is often provided by direct support professionals (DSPs) in residential facilities. Therefore, DSPs play a major role in the support of a healthy lifestyle for people with moderate to profound ID[9,10]. These DSPs usually have an educational background in social work or nursing for which a healthy lifestyle is not an element of the program. However, training and education can help DSPs to support a healthy lifestyle[11].

To support a healthy lifestyle, there are theory-based motor activity programs for people with profound intellectual and multiple disabilities[12,13]. However, previous research shows a lack of theory-based interventions and education for DSPs to support a healthy lifestyle[14]. Theory-based interventions are shown to have more potential for effective outcomes than interventions without a theoretical basis[15]. In a previous study, a theory-based training and education program was developed in co-creation with daily practice[16]. The content of the training and education program is based on the Theoretical Domains Framework (TDF), related to the COM-B System[17,18], and Behavior Change Techniques (BCTs)[19]. The TDF gives insights about the conditions to support a healthy lifestyle. The COM-B system is complementary to the TDF whereas this system explains the nature of behavior to change it. In addition, one of the skills DSPs need is motivating people with ID towards healthy behavior, therefore BCTs are added to the program. The mode of delivery of the program was based on Kolb's theory of Learning Styles[20]. The developed program consists of a training and education section with online and in-person components to support DSPs in promoting healthy living for people with moderate to profound ID. In the online component, DSPs gather knowledge and increase awareness of physical activity and healthy nutrition for this population. For the in-person component, DSPs participate in three sessions to discuss health promotion with the

following themes: Social/Professional Role and Identity, Skills (Behavior Change Techniques), and Social Influences, Environmental Context and Resources.

A next step is to examine the potential of this intervention by implementing the program and evaluating this process[21]. However, the implementation of newly developed programs has been shown to be a major challenge in organizations in general[22] and for ID care providers[11,12,23]. Reporting of implementation processes and identifying key facilitators and barriers is important for compiling a knowledge base for successful implementation[22]. ID care providers and researchers can learn from previously implemented interventions and apply that knowledge to advance implementation processes[12,23]. In order to evaluate its potential for widespread implementation, the aim of this study is to evaluate the preparation, implementation, and preliminary outcomes of a theory-based training and education program for DSPs to learn how to support people with moderate to profound ID in a healthy lifestyle.

Methods

Design

A theory-based program consisting of a training and education section to facilitate DSPs in promoting a healthy lifestyle for people with moderate to profound ID was implemented in four (residential) facilities of ID care providers in the Netherlands. A mixed method design was used to evaluate the implementation phase. This implementation process was operationalized and evaluated with the following components: recruitment, reach, context, dose delivered, dose received, fidelity[24], recruitment capacity, acceptability/suitability of the program, factors during implementation, data collection process, and changes in both DSPs and persons with ID after the program[25]. Figure 1 illustrates the design of the study.

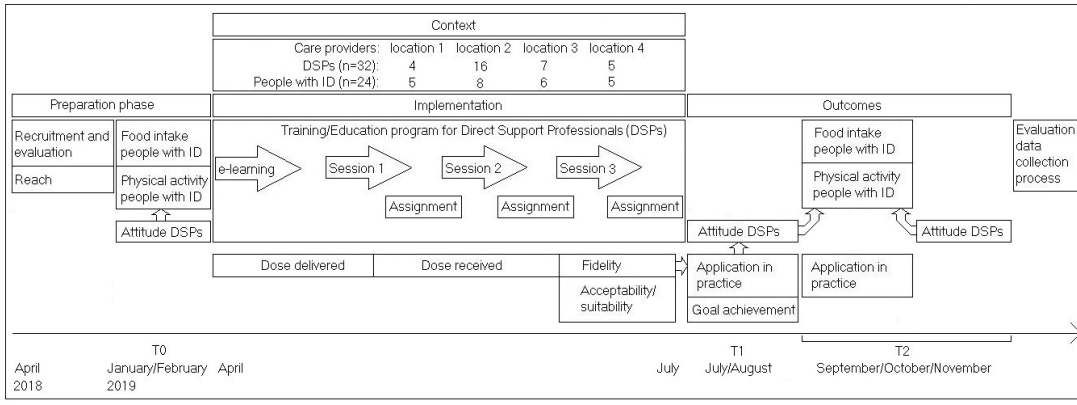

Figure 1 | *Design of the study*

Sample and context

The participants of four residential facilities and/or day activity centres from four different ID care providers were recruited within a consortium of eight ID care providers across the Netherlands. The inclusion criteria for the (residential) facilities were as follows:

- A (residential) facility where people with moderate to profound ID (≥18 years) receive support.

  In this study people with moderate to profound ID are defined as individuals who need support in several domains, for example in language, motor skills, sensory, and in activities for daily living[26,27]. These people experience limitations in both intellectual and adaptive functioning, in the following domains: conceptual, social, and practical adaptive skills. In addition, people with more severe intellectual disabilities experience more often mobility problems[28]. Based on the support needs people with ID are categorized as having moderate, severe, or profound ID.
- Readiness for implementation of the (residential) facility by checking the fit of the goal of the program in consultation with the facility.
- Availability of one trainer to support the program.
- Time capacity of the team for participating in the research study by receiving approval from the manager for the indicated time investment.

The contact persons of the ID care providers assisted in the recruitment of the teams working at the selected (residential) facilities by informing in person and distributing information flyers. If the team was interested in participating, the researchers contacted the team to discuss participation. If the recruited team had the capacity to participate, the DSPs, people with ID, and legal representatives were informed and asked for consent for the study.

The Discovering Health-promoting Assets in Settings for people with Intellectual Disabilities (DIHASID) tool was used to gain insight in the implementation context[29]. The DIHASID tool provides actionable knowledge about the social, physical, financial, and organizational assets for physical activity and healthy nutrition at a residential or day-activity accommodation[30]. From the enquired physical assets, seven out of 13 were available at all (residential) facilities, and an additional three were available at three (residential) facilities. For example, there was enough space at all of the (residential) facilities for physical activities. Some aids and equipment, such as activity-stimulating games, were not available for all settings. At all (residential) facilities, social assets were available, for example, health professionals to help with exercise activities. However, to support healthy living, friends, clients, volunteers, and a massage therapist were accessible at only one or two (residential)

facilities. At the policy level, the focus on healthy living in organizations was moderate to satisfactory; financial assets were also moderate to satisfactory[31].

Ethics approval and consent to participate

This study was conducted according to the principles of the Declaration of Helsinki and has been independently reviewed by the Medical Ethical Committee of the University Medical Centre Groningen (study number: 201700164). Exemption of this Committee was received because in this type of research no action or code of conduct is imposed on persons (WMO: Medical Research involving Human Subjects Act). In addition, the research is conducted according to the ethical guidelines of the Medical Treatment Contracts Act (WGBO), the General Data Protection Regulation (GDPR/ENG or AVG/NL), and FEDERA's codes of conduct. Participation of all respondents was voluntary and of no consequences to their work evaluations or rewards. Participants had the option to withdraw from participation without any consequences. Resistance among people with ID has been taken into account in the context of the Medical Research involving Human Subjects Act. DSPs, people with ID, managers/coordinator of the participating (residential) facilities, and the trainers of the program provided written informed consent for the study. Legal representatives provided written informed consent for the people with moderate to profound ID.

Theory-based program

A theory-based program for DSPs to learn how to support physical activity and healthy nutrition for people with moderate to profound ID was implemented[16]. The program consisted of (see also Figure 1):

1. E-learning to increase knowledge and awareness of physical activity and healthy nutrition for people with moderate to profound ID.
2. Three in-person group sessions of two hours with the following themes:
    - Social/Professional Role and Identity.
    - Skills (Behavior Change Techniques, BCTs).
    - Social Influences and Environmental Context and Resources.

The e-learning could be performed individually or with colleagues; the in-person sessions were performed within the team of DSPs at the (residential) facility where they work. Between and after the last in-person group session, practical assignments (three in total) were carried out within the team of DSPs.

The program was in operation from April 2019 to July 2019. The training was performed by two trainers: one trainer from the Hanze University of Applied Sciences (an experienced

teacher from the social work program) and one trainer of each ID care provider (e.g. a behavior scientist). Prior to the beginning of the program, the trainers received an instruction manual including PowerPoint presentations in order to prepare for the in-person sessions. A common meeting with the trainers was held to coordinate the sessions and to clarify uncertainties. After each session, there was brief contact with the trainers and with the first author about the process of the program. The e-learning was implemented in collaboration with the technical staff of the involved care providers. Before and during the program, there was consultation with the managers regarding the implementation (e.g. manager Knowledge and Innovation as well as manager residential facilities and day activity centers) and contact persons of the involved ID care providers in order to improve the implementation phase.

Data collection

To measure the implementation components, the definitions and underlying questions of Linnan and Steckler[24] and the objectives of Orsmond and Cohn[25] were used. The methods for data collection can be found in Table 1; the design of the study is depicted in Figure 1. In the preparation phase, for the evaluation of recruitment and reach, project notes were captured. For the changes in the context, questionnaires and interviews were used.

In the implementation phase, the dose delivered, dose received, and fidelity were captured with project notes, questionnaires, reflections, and assignments. The acceptability/suitability of the program was measured with reflections, questionnaires, and interviews. The last parts of the implementation phase, the factors during implementation, and the evaluation of the data collection process were measured with project notes. During the implementation phase of the program, the first author was present at one in-person session of the program with each of the four participating teams in order to observe whether the sessions were carried out as intended.

For the preliminary outcomes, the changes after the program for DSPs were measured in terms of goal achievement, actual application in practice, and attitude of DSPs towards nutrition and physical activity. These data were aggregated from questionnaires, interviews, and assignments. Goal achievement was measured with a questionnaire for DSPs one week after the last program session. The actual application of healthy lifestyle support in daily practice was measured during the program with practical assignments for DSPs and three months after the program with interviews with them. Managers were also surveyed about the actual application of the program in daily practice. The attitude was defined as the thoughts and feelings of DSPs regarding a healthy lifestyle[11]. The attitude of DSPs towards physical

activity and healthy nutrition was measured before the program (T0), one week after (T1), and three months after (T2) the last program session[11]. The attitude was measured on a 5-point Likert scale for which 1 indicates a negative and 5 a positive attitude. The psychometric properties of the questionnaires were favourable[11,32].

To evaluate the program, individual telephone interviews were held with half of the participating DSPs (n=17) as a sufficient representation on the following topics: recommendation of the program, connection to support needs, actual implementation in daily practice, and other interventions during the program.

In addition, changes in the level of physical activity and the amount of food intake of the participating people with ID were measured. Physical activity was measured with the Actigraph wGT3X BT for walking respondents[33,34] and with the Actiwatch for non-walking respondents[35]. The data for physical activity of the walking people with moderate to profound ID was collected with a frequency of 30 Hz[34], over 1 min epoch periods[36]. Additionally, DSPs recorded the planned movement activities during the measurements of physical activity. Food intake was measured with food diaries covering three days[37]. Food intake and physical activity were measured before (T0) and three months after (T2) the last program session.

Table 1 | *Components of implementation, indicators, data collection and analysis*

Component	Indicator	Data collection	Analysis
Preparation phase			
Recruitment and evaluation	-Recruitment process -Participant number -Time to recruit -Refusal rates -Feasibility/suitability inclusion criteria -Obstacles recruitment -Relevance of program to population	-Project notes	-Document analysis[38]
Reach	Number of DSPs from team	Project notes during delivery	-Calculation of DSPs from team
Context	-Environment changes (physical, social, political) -Other interventions	-Questionnaire DSPs -Questionnaire managers -Interviews DSPs	-Check on changes in environment beside the program -Check on other interventions (yes/no)
Implementation phase			
Dose delivered	Completion program	Project notes during delivery	-Calculation of completion of each part of the program
Dose received	-Execution of assignments -Activity during sessions	-Questionnaire DSPs -Reflection of trainers on sessions -Reflection of researcher (AO) on one session -Quality of assignments	-Descriptive statistics -Quality assignments checked with the following question: 'Do the assignments show that the DSP understood the assignment?'[23], and scored according to the following categories: ++ Almost everything on the assignment is correct, + there are more points on the assignment that are correct than points that are not correct, - there are fewer points on the assignment that are correct than points that do not match, -- almost everything on the assignment is not correct.

Table 1 | *Continued*

Component	Indicator	Data collection	Analysis
Fidelity	Execution of sessions by trainers	-Reflection of trainers on sessions -Reflection of researcher (AO) on one session	-Descriptive statistics
Acceptability/ suitability program	-Fit of program in daily practice (trainers, DSPs, managers) -Acceptability of program for DSPs and managers -Time/capacity to complete program (DSPs, managers)	-Reflection of trainers on sessions -Questionnaire DSPs -Questionnaire managers -Interviews DSPs	-Document analysis -Descriptive statistics -Conventional content analysis[39]
Factors during implementation	-Facilitators/barriers during implementation (expertise, capacity, budget, equipment available)	-Project notes during implementation	-Document analysis
Evaluation of data collection process	-Feasibility/suitability data collection procedures (missing data, understanding questions, time-consuming) -Sensitivity of outcome measures to changes after the program	-Project notes during data collection -Evaluation of outcomes in relation to methods	-Document analysis
Outcomes			
Changes after the program	-Goal achievement after program -Actual application in practice (DSPs, assignments, managers) -Attitude DSPs (T0, T1 and T2) -Food intake people with ID (T0, T2) -Physical activity of people with ID (T0, T2)	-Questionnaire DSPs -Questionnaire managers -Interviews DSPs -Assignments -Food diaries -Actigraph/Actiwatch/ Inventory of daily activity program	-Descriptive statistics -Conventional content analysis[39] -Application check assignments -Attitude changes: linear mixed models[40] in statistical programming language R[41]. -Food diaries: descriptive statistics, Wilcoxon signed Rank test -Actigraph: descriptive statistics, Wilcoxon signed Rank test -Actiwatch: descriptive statistics, calculating %inactive/active time -Inventory of daily activity program: descriptive statistics, Wilcoxon signed Rank test

Data analyses

In the last column of Table 1, details regarding the analyses are described. In the preparation phase, the project notes for the evaluation of recruitment and reach were analyzed with documentary analyses[38], and the DSPs per team were calculated. For the changes in the context, questionnaires and interviews were checked in other interventions (yes/no) and influential changes in the environment were examined.

In the implementation phase, the dose that was delivered was calculated based on the completion of the e-learning, in-person sessions, and the assignments. For the dose received, descriptive statistics were used, and the quality of assignments was checked, and they were scored for correctness[23]. For the fidelity of the program, the descriptive statistics for the reflections of the trainers and the researcher (AO) were analyzed. The acceptability and suitability of the program was analyzed with a document analysis in order to determine the reflection of the trainers regarding the open questions about the learning questions of the teams and additional comments. Descriptive statistics were used to analyze the questionnaires of DSPs and managers. In addition, a conventional content analysis[39] using ATLAS.ti was employed to analyze the suitability and acceptability of the program for DSPs. The factors during implementation and the evaluation of the data collection process was analyzed with a document analysis of the project notes made during the implementation.

For the preliminary outcomes, the changes after the program were analyzed with descriptive statistics for goal achievement. The actual application in practice was analyzed with a conventional content analysis[39], and the application was checked in the assignments. The changes in attitudes of DSPs towards a healthy lifestyle were analyzed with linear mixed models[40] in the statistical programming language R[41].

To analyze the changes after the program for people with ID, data for the food intake of people with ID were compared with the Dutch nutrition guidelines via a food meter. This is a Dutch tool to support appropriate composition of food intake according to the recommended nutrition guidelines. Of the food intake, 85% should meet the nutrition guidelines[42]. For physical activity, the cutoff points of Freedson et al.[43] were used for the Actigraph data according to Chow et al.[36]. Non-wear time was defined as 60 minutes, and a minimum wear time per day was set for 600 minutes with a minimum of four days of valid wear time. Only the non-wear time was excluded from analysis. The low frequency filter (LFE) was checked for low sensitive movements. The cutoff points of Van Alphen et al.[35] were used for the respondents wearing the Actiwatch; 0-15 counts inactive, >15 counts active. The data regarding both physical activity and nutrition before (T0) and three months after (T2) the

program were compared using the Wilcoxon signed rank test. For the Actiwatch data, the percentages of inactive and active time were calculated.

To obtain insight into the differences between the participating (residential) facilities and the outcome variables for DSPs (goal achievement, changes after program, relevance program, satisfaction program, and attitude) and people with ID (food intake, and physical activity), a one-way ANOVA was performed.

Two trained master students of Inclusive and Special Needs Education supported analysing the interview data with a conventional content analysis[39] and the food diaries, and one bachelor student of human movement sciences supported with the entry of the food diaries.

Results

The results are described in the order of the implementation process (see Table 1). The preparation phase will be reported first, and then the implementation phase will be discussed and, lastly, the outcomes with corresponding variables will be examined.

Preparation phase

Evaluation of recruitment and reach

Four residential facilities and/or day activity centres supporting adults with moderate to profound ID were included. All of the approached teams were enthusiastic about the program and its relevance. The time to recruit the appropriate number of participants was nine months (April 2018 until January 2019). DSPs also spent time to inform and obtain informed consent of the people with ID. The inclusion criteria could be met for this study, although difficulties were faced, for example, if people with mild ID lived or worked together with people with moderate to profound ID, and thus the target group did not completely match. In addition, the required time investment of the DSPs for the program and for the data collection was a challenge for the (residential) facilities.

Participants in this study were DSPs (n=32), people with moderate to profound ID (n=24), managers/coordinator of the participating (residential) facilities (n=4), and the trainers of the program (n=6). In total, 32 DSPs out of 41 DSPs from the four (residential) facilities participated in the study. The distribution of DSPs over the four (residential) facilities was as follows: 4, 16, 7, and 5 DSPs. Reasons for not doing so were: lack of presence at the (residential) facility at the time of the implementation due to attendance in another department of the ID care provider, not willing to commit to the time investment, or too

recently hired. The characteristics of the DSPs and the people with moderate to profound ID supported by the participating teams are described in Table 2.

Table 2 | *Characteristics of the DSPs and people with ID*

DSPs (n=32)	
Age in years, mean (SD)	34 (11)
Gender female, n	25
Education, n	
Senior secondary vocational education: Educational theory	11
Senior secondary vocational education: Nursing	2
University of applied sciences: Educational theory	12
University	1
Other:	6
Supplemental lifestyle training, Yes	7
Work setting, n	
Residential facility	11
Day activity centre	5
Combination group	16
Years of experience with people with ID, mean (SD)	11 (10)
Years working on current workplace, mean (SD)	3 (3)
DSP-to-people with ID ratio, mean (SD)	5 (4): 11(7)
People with ID (n=24)	
Age in years, mean (SD)	38 (17)
Gender female, n	8
Degree of ID, n	
Moderate ID	9
Severe ID	8
Profound ID	7
Wheelchair-user, n	3

Context

During the program, there were changes in the context that were not provoked by the implementation of the program. These changes were with regard to staff: decrease in staff at one (residential) facility (number 1) and additional education for two DSPs at one (residential) facility in order to become physical activity consultants (number 2). With regard to a healthy lifestyle, the following changes were made: decrease in budget for food at one (residential) facility (number 2), increasing offer of physical activity at one (residential) facility (number 4), and health related activities at two (residential) facilities (numbers 1 and 4), for example, receiving recommendations from a movement expert regarding physical activity, more indoor activities, a short class for people with ID about health, and a cooking activity one day per week for people with ID.

Implementation phase

Dose delivered, dose received and fidelity

All program components (e-learning, three in-person sessions, and three assignments) were available, although not all DSPs completed all of the components of the program. The e-learning was completed by 26 out of the 32 DSPs. All of the three in-person sessions were attended by 18 DSPs. The remaining 14 DSPs attended one or two in-person sessions. Reasons for not participating in the in-person sessions were illness, vacation, time, or private circumstances. An overview of dose delivered and dose received is described in Table 3. With regards to completing the assignments, six DSPs completed all three assignments, 13 completed either one or two assignments, and 13 did not complete any assignments.

Table 3 | *Dose delivered and dose received*

	Dose delivered (n=32), n	Dose received (n=32), n (%)
E-learning	32	26 (81)
In-person session 1	32	28 (88)
Assignment 1	32	15 (47)
In-person session 2	32	28 (88)
Assignment 2	32	12 (38)
In-person session 3	32	23 (72)
Assignment 3	32	11 (34)

The quality of the submitted assignments (38 out of 96) was mostly positive (23 assignments); see Table 4. The quality of the assignments was considered not sufficient if not all parts of the assignment were completed (e.g. there was no consultation with colleagues), the link to the theme of the in-person session was missing, a question was not well understood, or the BCTs were not clear enough.

According to the DSPs, 13 out of 32 prepared all of the in-person sessions. Some DSPs prepared only partly for the sessions. Reasons for not preparing were illness, absence, time, and not remembered. The trainers indicated that DSPs from two (residential) facilities in particular prepared inadequately for the in-person sessions. However, the participation during the sessions at these two (residential) facilities was neutral to good. One (residential) facility had different expectations (working with more clear action points) for the in-person sessions. Additionally, the group size for one (residential) facility was large (n=16), making the sessions less effective according to the reflection of the trainers. Overall, the execution of the in-person sessions in relation to theoretical methods and determinants was good (see Table 4).

Acceptability and suitability of the program

Table 4 shows the mean ratings of DSPs and the managers for the acceptability and fit of the program. It also indicates that, for two of the four (residential) facilities, the acceptability of the program was sufficient, and the fit of the program in daily practice was sufficient to good according to DSPs. For the other two (residential) facilities, the acceptability and suitability were insufficient to good; for one (residential) facility, the acceptability and relevance of the e-learning was considered insufficient whereas the satisfaction and relevance of the in-person sessions were good. The overall satisfaction about the preparation before the in-person sessions was insufficient according to DSPs. The satisfaction and the relevance of the in-person sessions was, for (residential) facility 2, statistically significantly lower in comparison to the other three (residential) facilities. The DSPs of (residential) facility 2 were overall less satisfied about the program and its relevance. All managers granted the program an eight as a rating (one manager could not answer this question), and three out of four were very positive about the content of the program (missing information for one manager).

Almost all of the interviewed DSPs (14 out of 17) indicated that they would recommend the program to colleagues. The DSPs mentioned that their recommendation depends on the status of the team in the domain of healthy lifestyle. Comments that were more critical by some of DSPs pertained to the lack of connection with the target group and the significant time investment of the program. In addition, all of the interviewed DSPs indicated that they were positive (n=17) about the connection of the program to their support needs. Approximately half of them (n=8) considered the awareness of a healthy lifestyle and communicating with each other in this context as positive. One DSP illustrates: '*I thought it was good. We do a lot of things, but it is the awareness of just simple things, like housekeeping, that is also physical activity. Often, we take over activities of our clients which they can do by themselves*' (respondent 5:9). Beside the positive statements about the connection of the program to support needs, there were also DSPs who made neutral (n=8) or negative (n=7) comments. They indicated that the program was not necessary or that they expected more tips for daily practice.

Table 4 | *Results of implementation: dose received, fidelity scores, acceptability and suitability of the program, and changes after the program (goal achievement, actual application in practice)*

	Overall mean	Facility 1 (n=4)	Facility 2 (n=16)*	Facility 3 (n=7)	Facility 4 (n=5)*
Quality of the assignments carried out by DSPs, assessed by researcher (AO) (number of assignments)					
++ Almost everything on the assignment is correct	6		4	1	1
+ There are more points on the assignment that are correct than points that are not correct	23	3	7	9	4
- There are fewer points on the assignment that are correct than points that do not match	7		5		2
-- Almost everything on the assignment is not correct	2			2	
Engagement of DSPs according to trainers and researcher (AO) (scale 1-5, 1=very bad, 5=very good)					
Preparation for the in-person sessions	2.6****	3.1	1.6	2.6	3.0
Involvement of DSPs during sessions	4.3	4.4	3.4	4.4	4.9
Execution of in-person sessions in relation to theoretical methods and determinants according to trainers and researcher (AO) (scale 1-5, 1=very bad, 5=very good)					
Sessions conducted as indicated	3.8	3.4	3.4	4.1	4.1
Goal achievement	4.1	4.4	3.7	4.0	4.4
Components sessions conducted	3.8	3.9	3.4	3.7	4.1
Fit of the program in daily practice according to DSPs (mean rating 1-10)**					
Relevance e-learning	5.6	6.8	5.4	4.9	6.7
Relevance in-person sessions*****	6.6	7.0	5.4	8.1	8.7
Fit of the program in daily practice according to managers (scale 1-5, 1=totally disagree and 5=totally agree)					
Fit of the content of the program	5	5	5	-***	5
Smooth implementation	3	2	2	-	5
Acceptability of the program according to DSPs (mean rating 1-10)**					
Overall impression e-learning	5.9	6.5	5.7	5.3	7.0
Overall impression in-person sessions	6.3	7.0	5.2	7.9	7.7
Satisfaction e-learning	5.8	6.3	5.7	5.4	6.7
Satisfaction in-person sessions*****	6.2	6.5	4.9	8.1	8.0
Satisfaction preparation for in-person sessions	5.1	5.3	4.8	5.0	7.0
Satisfaction assignments	5.7	6.0	5.2	6.0	6.7
Satisfaction teaching methods	6.4	7.0	5.2	7.9	7.3
Satisfaction ratio theory: practice	5.7	6.8	4.7	6.3	7.7
Satisfaction trainers	6.9	7.5	6.3	7.7	7.3
Acceptability of the program according to managers (report rating 1-10)					
Satisfaction program	8	8	8	-	8
Time capacity according to DSPs (scale 1-5, 1=totally disagree and 5=totally agree)					
Time investment of the e-learning is feasible	2.7	3.0	2.6	2.3	3.3
Time investment of the in-person sessions is feasible	3.2	3.0	3.3	2.9	4.0
Available time for in-person sessions was sufficient	3.8	4.0	3.4	4.4	4.3

Table 4 | *Continued*

	Overall mean	Facility 1 (n=4)	Facility 2 (n=16)*	Facility 3 (n=7)	Facility 4 (n=5)*
Time between in-person sessions was sufficient	3.9	3.5	3.5	4.6	4.3
Number of in-person sessions was sufficient	3.9	4.0	3.4	4.7	4.3
Time investment in proportion with proceeds	3.3	3.3	2.8	4.1	4.0
My manager supported me during the program	3.3	3.0	3.5	2.3	4.3
Time capacity/costs according to managers (scale 1-5, 1=totally disagree and 5=totally agree)					
Time investment of program is feasible	3.8	2	4	4	5
Time investment in proportion with proceeds	4.5	5	4	-	-
Costs are feasible for daily practice	4.3	3	5	-	5
Goal achievement e-learning according to DSPs (scale 1-5, 1=totally disagree and 5=totally agree)					
Knowledge healthy nutrition/ possible meaning of PA for people with ID	3.9	4.0	3.6	4.1	4.3
Knowledge PA for people with ID	4.0	4.0	3.7	4.4	4.3
Knowledge benefits healthy nutrition/PA for people with ID	4.2	4.3	3.9	4.7	4.3
Knowledge practical tips/recognize possibilities for healthy lifestyle	3.8	3.8	3.6	4.1	4.3
Goal achievement in-person sessions according to DSPs (scale 1-5, 1=totally disagree and 5=totally agree)					
Awareness of own norms and values, and autonomy of people with ID	4.3	4.0	4.1	4.7	4.7
Able to use BCTs	3.9	4.0	3.7	4.1	4.3
Able to use support from family/parents/others	3.7	4.0	3.2	4.1	4.3
Paying attention to healthy lifestyle in daily practice	3.9	4.0	3.7	4.3	4.3
Working together for lifestyle	4.3	3.8	4.3	4.4	4.7
Changes after the program on daily practice according to DSPs (mean rating 1-10)**					
Changes after e-learning on daily practice	5.5	6.3	5.1	5.1	7.0
Changes after in-person sessions on daily practice*****	6.3	6.8	5.3	7.6	7.7
Changes after the program on daily practice according to managers (scale 1-5, 1=totally disagree and 5=totally agree)					
More attention to healthy nutrition	4.5	4	5	5	4
More attention to physical activity	4	4	5	3	4

*One DSP did not fill in the complete questionnaire.

**For (residential) facility 4 three DSPs answered the questions.

***This question could not be answered.

****The grey colour in the cells represent negative, neutral or positive results: the darker the colour the more positive. For the rating: 1-2 is very negative, and 9-10 is very positive.

*****Statistically significant differences between (residential) facilities.

Time and capacity to complete the program

Per DSP, the time investment of the program, including preparation and assignments, was an average of 11 hours. The feasibility of the time investment of the e-learning was, according to the DSPs, slightly negative to neutral. The feasibility of the time investment of the in-person sessions was neutral to positive. They indicated that the number of sessions, the available time, and the time between the in-person sessions was good. The time investment of the program and the proceeds were rated neutral to positive. The experienced support from their manager was slightly negative to positive according to the DSPs (see Table 4 for their ratings). Overall, the managers indicated the time investment of the program was feasible with the exception of a single manager indicating that the time investment was too much, especially for the research element. The costs associated with the time investment were feasible according to the managers. They were positive about the time spent on the program and the outcomes (see Table 4 for the ratings of the managers). The capacity to complete the program as operationalized by DSPs' participation in the activities during the meetings was sufficient (score 4.1 on a scale from 1 to 5).

Factors during implementation

Factors for implementation were addressed when developing the program and designing the study, for example, continuous communication about the program[16]. The primary researcher was able to manage the conditions to facilitate the implementation of the study and the program. The willingness to participate was good, however, despite careful discussions of expectations, the time for the DSPs to participate in the study and the program was limited. In addition, according to two of the four managers, the implementation of the program requires improvement, for example. with respect to the alignment of mutual expectations before the beginning of the program.

Evaluation of the data collection process

Based on the goals of the program, the overall sensitivity of the outcome measures to the changes after the program was good. The DSPs understood the questions and guidelines to complete the data collection. They were requested to fill in questionnaires, participate in interviews, and track food intake and physical activities of people with ID. This data collection process appeared, as noted before, time consuming for the participating teams which resulted in missing data. Regarding the missing data for the food diaries, at T2, six days of six people with ID were missing. Additionally, part of the diaries or details were missing which could not be included. For physical activity at T0, six people with ID did not wear the

Actigraph for at least four days for ten hours, and one of them lost the Actigraph. Additionally, at T2, three people with ID did not wear the Actigraph.

Preliminary Outcomes

Changes after the program

Figure 1 and Table 1 provide an overview of the design and the indicators for the changes after the program. The outcomes will be described based on the indicators: goal achievement of the program, actual application in practice, attitude of the DSPs, food intake of people with ID, and physical activity of people with ID.

Improving knowledge and skills

Overall, the DSPs' goals of the program have been achieved for both the e-learning and the in-person sessions; see Table 4. They rated their knowledge about physical activity and nutrition for people with ID; these ratings were a 6.6 and a 7.2, respectively, at T0 and T1. This shows an improvement in knowledge directly after the program ($Z=-2.923$, $p=0.003$).

Actual application in practice

The change in daily practice following the program was sufficient to good for two of the four (residential) facilities according to DSPs. For one (residential) facility, the change was insufficient and, for one (residential) facility, just the change in daily practice from the e-learning was insufficient. For (residential) facility 2, the in-person sessions made statistically significantly less change on daily practice. See Table 4 for the ratings.

The actual applications in practice mentioned by the DSPs were: 'awareness about a healthy lifestyle' (n=16); a DSP illustrated: '*It is in the little things. I am more aware that I let people with ID clean up themselves after dinner instead of doing that for them*' (respondent 3.33); 'introducing more physical activities' (n=14); using the BCTs (n=13); prepare or offer healthy nutrition (n=12); and let people with ID choose themselves (n=12). Almost all of the DSPs (n=15) indicated nothing has changed in involving family and others in a healthy lifestyle of people with ID. Besides these comments, 11 DSPs had some neutral comments. They indicated the use of the BCTs depends on the people with ID (n=6), and the actual application in practice is dependent on the attitude of the DSP (n=5).

Overall, the managers indicated that the teams spent more attention on a healthy lifestyle in daily practice (see Table 4 for the ratings of the managers). Despite the improvement, the DSPs still struggle with the integration of healthy lifestyle behavior into working processes.

Attitude of DSPs on supporting healthy lifestyle

There is a significant increase over time on the attitudes of nutrition and physical activity of the DSPs between T0 and T2 (three months after the program), resulting from a mixed model analysis with random effects for DSPs; see Table 5 which is illustrated in Figure 2. At T1, the change in attitude after the program is not statistically significant for physical activity and, for nutrition, the change is borderline significant.

Table 5 | *Change on attitude of DSPs over time; fixed effects (Estimate) with T0 as reference from mixed modeling using random DSP effects*

	Mean	Estimate	Standard error	Degrees of freedom	t-value	$p<0.05$*
Nutrition intercept (T0)	3.2	3.2	0.1	88.6	23.093	
T1	3.6	0.4	0.2	60.2	1.974	0.05
T2	3.9	0.7	0.2	60.3	3.518	0.00***
Physical activity intercept (T0)	3.7	3.7	0.1	66.3	31.920	
T1	3.7	-0.0	0.1	60.8	-0.023	0.98
T2	4.0	0.3	0.1	60.1	2.112	0.04*

*Significance codes: ***=0.001, **= 0.01, *=0.05

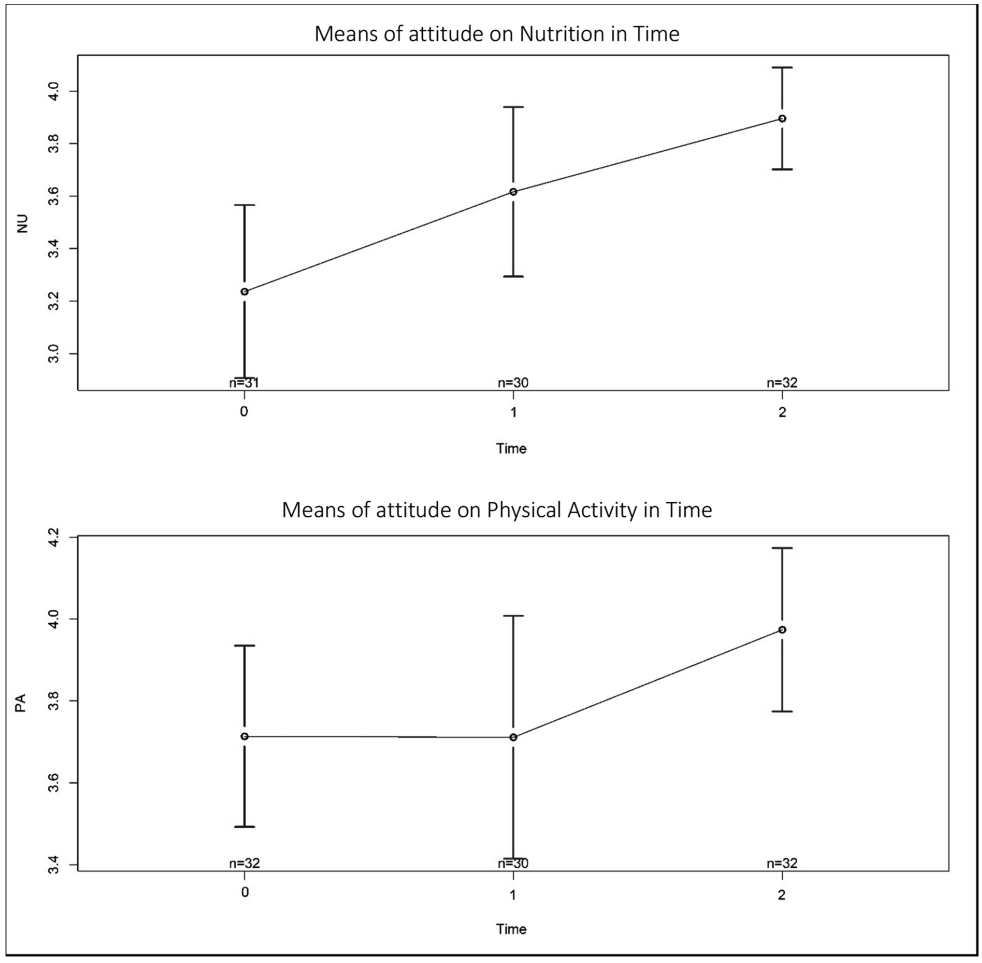

Figure 2 | *Means of attitude of DSPs on nutrition (NU) and physical activity (PA) at T0, T1, and T2*

Food intake of people with ID

The food intake of people with ID who were supported by the participating DSPs was measured before (T0) and three months after the program (T2). A statistical difference was ascertained between T0 and T2 for food intake from the recommended nutrition guidelines (Z=-1.979, p=0.047). Table 6 shows the descriptives from T0 and T2. For the mean percentages of food intake from the recommended nutrition guidelines, this guideline is not reached.

Table 6 | *Descriptive statistics for percentage food intake from the recommended nutrition guidelines at T0 and T2*

	Minimum (%)	Maximum (%)	Median	SD	Z	*p*<0.05*
T0 (n=22)	30	56	46.00	8.20		
T2 (n=22)	26	75	52.00	12.22	-1.979	0.047*

*Significance codes: ***=0.001, **= 0.01, *=0.05

Physical activity of people with ID

The physical activity of people with ID who were supported by the participating DSPs was measured before (T0) and three months after the program (T2). Table 7 shows the mean levels of activity of the people with ID who are able to walk. No significant differences between T0 and T2 were found (% Sedentary: Z=-0.459, p=0.695; % Light: Z=-0.357, p=0.770; % Moderate: Z=-0.357, p=0.750; % Vigorous: Z=-1.604, p=0.250; % Very Vigorous: Z=-1.414, p=0.500). The percentages demonstrate that people with ID spend most of their time in a sedentary state. Table 8 shows the percentages of time spent in activities for people with ID who use a wheelchair; the percentage of time in activities before and after the program is almost the same. During the measurements, two Actigraphs were lost, and one participant did not accept wearing the Actigraph. In addition, the daily activity programs before and after the program were compared. No statistical differences were determined between T0 (Mean: 22.75, SD: 23.77) and T2 (Mean: 24.79, SD: 34.01): Z=-0.280, p=0.844.

Table 7 | *Mean (SD) level of physical activity of walking people with ID (measured by Actigraph)*

	% sedentary	% light	% moderate	% Vigorous	% Very Vigorous
T0 (n=14)	64.11 (15.53)	33.25 (14.94)	2.46 (2.70)	0.17 (0.40)	0.01 (0.04)
T2 (n=12)	68.78 (19.08)	28.85 (18.36)	2.29 (2.68)	0.08 (0.24)	0.00 (0.01)
Z	-0.459	-0.357	-0.357	-1.604	-1.414
p<0.05*	0.695	0.770	0.750	0.250	0.500

*Significance codes: ***=0.001, **= 0.01, *=0.05

Table 8 | *Mean (SD) level of physical activity of people with ID using a wheelchair (measured by Actiwatch)*

	% inactivity (0-15 counts)	% activity (>15 counts)
T0 (n=3)	58.67 (29.54)	41.33 (29.54)
T2 (n=3)	58.60 (33.51)	41.40 (33.51)

Differences in outcomes for the four participating (residential) facilities

For the differences in outcomes between the four participating (residential) facilities, statistically significant variances were ascertained for the changes after the in-person sessions (actual application in practice)(F=5.848; p=0.004) and for the relevance (F=11.606; p=0.000)

and satisfaction (F=14.004; p=0.000) of the in-person sessions (acceptability/suitability). No statistical differences between the four participating (residential) facilities were found for goal achievement, the attitude of DSPs, food intake, and physical activity of people with ID.

Discussion

Main findings

The aim of this study was to evaluate the preparation, implementation, and preliminary outcomes of a theory-based training and education program for DSPs to learn how to support people with moderate to profound ID in a healthy lifestyle. The results provide preliminary empirical evidence for this program. Results show that the preparation phase was feasible. Regarding the implementation phase, the overall fidelity of the program was good, although completing the program, the presence, and preparation for the in-person sessions were points of attention. All of the DSPs were positive about the connection of the program to their support needs whereas, for half of the (residential) facilities, the fit of the program was sufficient. The acceptability and suitability of the program were sufficient, however, the face-to-face sessions were rated more positively than the e-learning. The DSPs ranged from slightly negative to positive about the time investment, and the alignment of the mutual expectations of all stakeholders about the program was considered as important and need to be improved. Almost all of the DSPs would recommend the program. The managers were also positive about the content of the program, and the awareness of the importance of a healthy lifestyle in the teams, even though the teams still struggle with the integration of healthy lifestyle behavior into working processes. Despite the implementation barriers, the DSPs considered the goals of the program to be achieved. The changes after the program were sufficient.

During implementation, barriers were encountered: the DSPs were not always satisfied, the program was not always relevant to them, and they had different experiences about the changes in daily practice after the program. Nevertheless, there were no statistically significant differences in changes after the program between the different (residential) facilities. This may suggest that, despite the mixed opinions of the DSPs regarding the program, it indeed has impact on their attitudes for supporting a healthy lifestyle, which was recognized in a previous implementation study[23]. In this study, the DSPs made positive changes although, in their own perception, they believed their participation in the training program was obligatory.

The DSPs' attitudes towards supporting a healthy lifestyle on nutrition increased directly after the program. For both nutrition and physical activity, their attitudes significantly increased after three months. This is in accordance with previous research in which education was mentioned as a factor that positively influences the attitude of DSPs for supporting physical activity[14,44,45]. This improvement of DSPs' attitudes is important because it contributes to successful implementation of a healthy lifestyle[46,47].

In addition, for the changes for people with ID after the program, statistically significant improvements were found for food intake; however, for physical activity, no statistical differences were determined. Additionally, the involvement of family and others in a healthy lifestyle for people with ID needs improvement. This social network can be supportive in adapting to the needs of people with ID by focusing on their strengths and, for example, including them in decision-making[48].

Strengths and limitations

This study was executed in daily practice at four ID care providers; this is where the actual implementation of the program should occur. Although this strength of executing the study in daily practice also brought some limitations for the study, it was the reality of the workplace for the DSPs and therefore provided a realistic representation of the implementation of the program. This study shows important factors that must be taken into account when implementing programs in daily practice.

The changes after the program should be interpreted with caution. The study had a relative small sample size of 32 DSPs and 24 people with ID. In addition, there were missing data in the food diaries of people with ID, and not all persons with ID wore the Actigraphs for the recommended amount of time. Therefore, these outcomes are based on a small sample. However, this is the reality of data collection in daily practice and, nevertheless, the changes after the program were promising.

Although the data collection was suitable for measuring the changes after the program, the feasibility of the data collection process needs improvement regarding the time investment for DSPs. For example, filling in food diaries and wearing physical activity trackers can be components of the daily routine to facilitate the data collection process. The lack of time for implementation corresponds with findings from other implementation studies[12,23].

Furthermore, physical activity and food intake was measured three months after the last program session. This post-test was after the summer holidays, taking into account the absence of regular staff. This may be a limitation because it is questionable if there is a

causality between the program and its outcomes, for example, context factors such as changes in the organization, or the different seasons can be a mediating variable. In addition, for future research, a follow-up measurement can indicate healthy lifestyle changes in the long term.

Implications for implementation

For further implementation of the program, communication and alignment with all stakeholders is an important factor. By discussing mutual expectations in advance, disappointments are avoided, and it improves the relevance of the intervention in daily practice[11]. A contact person who is responsible for managing the mutual expectations and the sustainable execution of the plans would support the actual implementation of the program. The program in this study was flexible to the needs at a specific (residential) facility and adaptable to the target group that DSPs work with; this is an important factor for implementing a health promotion program[22]. Therefore, it is important that at least one of the trainers is familiar with the (residential) facility so that the program can be aligned to the needs of the DSPs. The staff change in teams also affects the knowledge and skills of the team about a healthy lifestyle and impedes the continuation of an intervention[49]. Therefore, it may be considered to perform the program again, maybe in a short form, when hiring new DSPs. In addition, a maximum group size for an intervention should be considered in order to be able to properly conduct the intervention. For larger teams, it can be considered to split them up for optimal utilization.

In the evaluation of the program, for the measurements of people with ID, the residential facility where they live should be responsible for the physical activity and food intake measurements. They are with the people with ID at the beginning and end of the day so are able to check the measurements. This data collection should be incorporated into the daily routine to avoid missing data. The importance of the commitment of staff in the implementation is also addressed in a previous evaluation study[50].

Conclusions

The theory-based program consisting of a training and education section for DSPs to learn how to support a healthy lifestyle for people with moderate to profound ID was feasible to implement and, despite some barriers regarding time capacity and mutual expectations, it delivered positive changes in both DSPs and persons with moderate to profound ID. Thus, the program is a promising intervention to support DSPs.

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Chapter 7

Summary and general discussion

Summary and general discussion

The aim of the research reported in this thesis was to facilitate a healthy lifestyle for people with moderate to profound intellectual disabilities (ID) by improving the lifestyle support provided by direct support professionals (DSPs). This was achieved by identifying their support needs and designing, implementing, and evaluating an educational lifestyle program to improve DSPs' support of people with moderate to profound ID in living a healthy lifestyle.

In this chapter, a summary of the primary findings will be provided followed by a general discussion. Finally, implications for education, practice, policy, and future research will be discussed.

Summary of main findings

When supporting people with moderate to profound ID to live a healthy lifestyle, DSPs require specific knowledge and skills related to physical activity and nutrition. The development of interventions to meet these needs is required because of their important role. Previous research shows that the Theoretical Domains Framework (TDF) is an evidence-based framework that helps in understanding which domains are instrumental to influencing health behaviors[1–4]. It was unclear which specific knowledge and skills DSPs would need according to the TDF. Therefore, in **Chapter 2**, the aim was to identify the needs of DSPs in their support of people with moderate to profound ID to achieve and maintain a healthy lifestyle. DSPs (n=28) were interviewed with a semi-structured protocol based on the TDF[1,2]. They most frequently mentioned five support needs in the following domains: (1) Environmental Context and Resources, (2) Social/Professional Role and Identity, (3) Social Influences, (4) Skills, and (5) Knowledge. They primarily need support related to the domain 'Environmental Context and Resources' in order to support people with moderate to profound ID in leading a healthy lifestyle. Within this domain, available time, dealing with different seasons, and a healthy lifestyle policy in the organization were specifically mentioned.

In the domain 'Skills', one of the skills to support a healthy lifestyle is motivating people with ID. A way to do so may be by using Behavior Change Techniques (BCTs). However, it is currently unknown whether BCTs are used by DSPs and, if so, which are used. The aim in **Chapter 3** was to determine whether and which BCTs were used by DSPs for supporting healthy lifestyle behavior such as physical activity and nutrition of people with moderate to profound ID. DSPs (n=18) were observed in their daily work using audio-visual recordings. To

code the BCTs that were used, the Coventry Aberdeen London Refined (CALO-RE-NL) taxonomy was employed consisting of 40 different BCTs[5]. Two BCTs for people with moderate to profound ID were added to the taxonomy based on a pilot study. The results of the observations showed that DSPs were using 33 out of 42 BCTs. The most used were: 'feedback on performance', 'instructions on how to perform the behavior', 'doing together', 'rewards on successful behavior', 'reward effort towards behavior', 'DSP changes environment', 'graded tasks', 'prompt practice', and 'model/ demonstrate behavior'. Although a variety of BCTs is used in the support of people with moderate to profound ID when facilitating healthy lifestyle behavior, DSPs rely heavily on these nine most prevalent BCTs. DSPs may require additional skills to use a wider variation of techniques. Furthermore, awareness about the use of BCTs can overcome their support need for motivation skills and support them in becoming more confident in supporting healthy lifestyle behavior.

The healthy lifestyle support that DSPs provide is a characteristic of their behavior. According to the social-cognitive theory, behavior is influenced by their intention, and their intention is partly determined by attitude[6]. Attitude is defined as the thoughts and feelings of DSPs regarding a healthy lifestyle[7] for which an instrument for measuring this was previously developed. However, an instrument to measure the attitude of DSPs towards nutrition was lacking. Therefore, the aim in **Chapter 4** was to determine the internal validity of the adapted attitude of DSPs questionnaire for nutrition. The existing Health Enhancing Physical Activity Questionnaire was adapted into the Attitude of DSPs for Health Enhancing Nutrition (ADSP-HENU). The ADSP-HENU was completed by 31 DSPs. The internal validity of the questionnaire was investigated using Cronbach's Alpha and an exploratory non-parametric item response analyses (NIRT). The internal consistency by Cronbach's Alpha for the ADSP-HENU was good (0.87, 95% CI [0.81-0.94]). The NIRT showed monotonicity with wide confidence bounds and strong point polyserial correlations of the items with the underlying nutrition attitude construct. This indicates that each item attributes to the overall attitude that is measured. Despite the small sample size, this study showed that the internal validity of the ADSP-HENU is promising, and it is a short attitude questionnaire for DSPs that can be used in clinical practice for evaluation and therefore to develop, improve, or adapt intervention to DSPs' needs.

Education and training can improve the knowledge and skills of DSPs in their healthy lifestyle support for people with ID, specifically when theory-based programs are used. However, no theory-based education program was available for DSPs. Therefore, in **Chapter 5,** we aimed to develop a theory-based intervention for DSPs to help them support a healthy

lifestyle for people with moderate to profound ID based on the knowledge gained in the previous studies. The Intervention Mapping Protocol was adhered in order to develop a training and education program for DSPs to support a healthy lifestyle for people with moderate to profound ID. This study provided a theory-based program consisting of a training and education section with e-learning and in-person components to achieve this. In the e-learning module, the themes Knowledge and Awareness of physical activity and healthy nutrition for people with moderate to profound ID were addressed. After the e-learning module, three team sessions with the following themes were planned: Social/Professional Role and Identity, Skills (BCTs), and Social Influences, and Environmental Context, and Resources. During the program, structural attention for lifestyle and sustainability were emphasized. The program can be individually adapted to the learning needs of DSPs and the people with ID who they support. In addition, this study provided a protocol for a process and feasibility study to investigate the potential of the program.

For determining the possibilities of the developed program and changes after implementing the interventions, effective implementation is an important prerequisite. However, although knowledge about implementation of interventions aiming at improving physical activity is available, factors influencing the implementation of education programs in ID support organizations are scarce. Therefore, in **Chapter 6,** the aim was to evaluate the preparation, implementation, and preliminary outcomes of a theory-based training and education program for DSPs to learn how to support people with moderate to profound ID in a healthy lifestyle. The program consisting of e-learning, three in-person sessions, and three assignments was implemented. The implementation process was evaluated with a mixed method design and focused on the recruitment, reach, context, dose delivered, dose received, fidelity, acceptability/suitability of the program, factors during implementation, evaluation of data collection process, and changes after the program. Regarding the preparation phase, the amount of time to recruit participants was nine months in duration, and the inclusion criteria were feasible. The program was implemented in four (residential) facilities (DSPs: n=32, people with ID: n=24). The e-learning was completed by 81% of the DSPs, 72-88% attended the in-person sessions, and 34-47% completed the assignments. Overall, the fidelity of the program was good. DSPs recommended the program, although they were either negative or positive about the time investment. Mutual agreement on expectations appeared to be important for its acceptability and suitability. Regarding the outcomes, the goals of the program were achieved, and attitudes of DSPs towards healthy lifestyles were improved three months after implementation of the program. Healthy food

intake of people with ID improved statistically significantly; for physical activity, no statistically significant differences were found to the extent of being active. The program could be sufficiently implemented and, despite some barriers regarding time capacity and mutual expectations, it delivered changes in both DSPs and the lifestyles of persons with moderate to profound ID. The program is therefore a promising intervention for educating DSPs.

General discussion

Healthy lifestyle in professional education

The training and education program developed in this thesis should be part of the professional education of DSPs because a healthy lifestyle as a topic does not appear to be sufficiently addressed in their professional education. Their professional background is usually educational theory or nursing as a secondary vocational education or at a university of applied sciences. The education consists of a general component for all students and a specific element aimed at a certain specialization. In addition, there are options in the education programs that students can take according to their own interests. In senior secondary vocational education, a healthy lifestyle is often an optional part in the curriculum. Especially for students who are educated to become DSPs, the healthy lifestyle is optional while this topic should be part of the general support they provide given the risks and consequences of an unhealthy lifestyle for people with ID[8–11]. Additionally, in the bachelor of social work at a university of applied sciences, the topic of a healthy lifestyle is a minor part in the curriculum, and it does not seem to be addressed with regards to the target group of people with moderate to profound ID. However, a healthy lifestyle is addressed in a few lectures in relation to healthy ageing in general. This seems to be a missed opportunity because professionals lack the knowledge and skills to support this for people with moderate to profound ID[12–16]. Facilitating their healthy lifestyle is important because they generally have low levels of physical activities and often have an unhealthy diet[8,17]. Moreover, a healthier lifestyle ensures potential health gain[18], positive effects on behavior[19], alertness[20], and a better quality of life[21]. Therefore, to support a healthy lifestyle for people with moderate to profound ID, two topics in the professional education of DSPs must be addressed. Firstly, all students need an introduction into the group of people with moderate to profound ID so that students have the opportunity to make an informed choice for the specialization during their education program. Secondly, they need to be educated regarding

the importance of a healthy lifestyle early in their education and how to support this in general and specifically for persons with moderate to profound ID. The need for specialized education also appeared in previous research in the areas of physical, social, and cognitive activity as well as for nutrition and risk factors for the successful ageing of people with ID[22].

The use of BCTs should be an important part of healthy lifestyle education in general. They are effective in the support of a healthy lifestyle and are developed for the general population[23–25], however, they can also be used in an adapted manner for people with moderate to profound ID (**Chapter 3**). The use of BCTs underlines the need to look at the possibilities of people with moderate to profound ID and their capabilities and thus their support needs. The importance of the use of BCTs is also emphasized in previous lifestyle research that showed that low motivation is a barrier for engagement in physical activities in adults with ID[26]. Using BCTs is a basic skill for motivating people to change their behavior in general and in supporting individuals with ID. For example, BCTs are also effectively being used by DSPs when challenging behavior such as when aggression or self-injurious behavior is present[27]. In addition, BCTs can more explicitly be used by DSPs supporting people with ID regarding a healthy lifestyle. As our research showed (**Chapter 3**), DSPs already use BCTs, however, more awareness of if and when to use them may improve their lifestyle support. With BCTs, small steps towards a healthy lifestyle can be made while creating successful experiences and, taken together, these small steps may result in a healthier lifestyle[28]. One step for persons with moderate to profound ID is, for example, integrating physical activities in daily routines such as helping with simple household chores[26]. This is very important because they firstly lead to an improvement in health and lifestyle[29]. Secondly, these types of steps may lead to more participation in daily activities which is also important with regard to quality of life[30,31].

Interprofessional collaboration

In addition to the support needs of DSPs, they indicated that they could learn from and be supported by other professionals and from each other in supporting a healthy lifestyle (**Chapter 2**). There should be a learning environment where behavioral scientists, physiotherapists, dieticians, and physicians for people with ID with whom DSPs cooperate should contribute, for example, by sharing knowledge about how physical activities can be supported. Consequently, both aspiring professionals and professionals already working in ID practices can benefit from the new insights gained in this research. Our findings were already communicated to professionals during congresses and papers, but implementing this

knowledge in professional education is necessary. The knowledge gained from learning about and being aware of the potential of DSPs using BCTs regarding physical activity and nutrition could be forwarded to DSPs in the advising role of behavioral scientists and allied health care professionals.

In addition, interprofessional collaboration is needed to learn from each other's expertise in clinical practice in a cooperative learning environment[32]. Within interprofessional support, behavioral scientists, allied health care professionals, and DSPs should achieve consensus about how to execute BCTs, which BCTs may be most suitable for a specific person, and using the same BCTs in coordination with each other in order to provide clarity and structure to people with ID. This agreement about using BCTs should be adapted in the support plans of people with ID. Using a joint working method based on the perspective of the person with ID, the interprofessional support for these individuals may thus become more effective, coordinated, and improving the support they provide. The interprofessional collaboration can already begin in professional education in which students from different disciplines and education levels collaborate on issues related to a healthy lifestyle, for example, in a minor where students from different disciplines work together on healthy ageing for people with ID[33].

Competence profiles for DSPs

A more prominent role for physical activity and healthy nutrition and how to integrate this in the daily support would be very helpful in changing the current clinical practice and education, including the required competences that DSPs need to support a healthy lifestyle based on this thesis. For DSPs, the competences and core tasks to support people with ID are described in the competence profiles of the Dutch Association of ID care provider services[34–36]. The general competence profile for DSPs working with individuals with ID describes that the DSP provides information and encourages healthy nutrition and physical activity. However, in the specific competence profile for people with severe or profound intellectual and multiple disabilities and people with severe to profound ID and behavioral problems, encouraging physical activity and healthy nutrition is not a topic[35,36]. To bridge this gap, BCTs as a competence can be included in the general and specific competence profiles that are used to provide direction for professional education of DSPs. If competences such as using BCTs are integrated in professional education, DSPs have concrete tools to encourage healthy lifestyles in daily practice.

A supportive environment for healthy living

When drafting policies related to a healthy lifestyle, the target group of people with moderate to profound ID need to receive specific attention because of the support they require from their environment to live healthily and their increased risk for developing health problems. This attention towards a healthy lifestyle is needed on national, regional, and organizational levels as well. On the national level, campaigns for a healthy lifestyle led by the government should also be applicable for people with moderate to profound ID. For example, the Ministry of Health, Welfare, and Sport wants to stimulate physical activities in childcare and, therefore, half of the locations are required to have a trained health employee. Similar measures for living and day programming facilities for individuals with ID would be very helpful for supporting a healthy lifestyle for this group as well.

In addition, DSPs operate in a wider context when supporting a healthy lifestyle of people with ID of which, from an ecological perspective, the organization where they work and the community are a part[37,38]. To improve the healthy lifestyle support from DSPs on an interpersonal level, the environment should be encouraging for healthy lifestyle behavior. To this end, the larger project of which this thesis was a part focused on a healthy environment and on the role of DSPs specifically. To screen the living environment of people with ID, the DIscovering Health-promoting Assets in Settings for people with ID (DIHASID) tool can be used[39]. It provides actionable knowledge about the social, physical, financial, and organizational assets for physical activity and healthy nutrition. DSPs can follow the training and education program developed in this thesis and use the DIHASID tool which accords with the last topic of the education program about the environmental context, resources, and social influences. In an ideal situation, there is cooperation at all levels around the people with ID in order to optimize the support and therewith their well-being. To perform healthy lifestyle support in an optimized environment, people with ID, for example, are supported by their families to live healthily. They are afforded opportunities for physical activities whereby the environment is accessible to go outside, there is a budget to cook healthily or to undertake physical activities such as swimming, and a healthy lifestyle policy is present in the ID support organizations. In such an environment, DSPs are facilitated and motivated to support healthy lifestyle behavior.

Methodological reflection

In most of the research with people with moderate to profound ID, the small sample sizes and heterogeneity of the samples are a methodological challenge[10,40]. The total population of these individuals in the Netherlands is estimated to include 70.000 people[41]. This population is very heterogenous, varying in the degree of ID, and experience additional problems such as health issues, sensory problems, motor problems, behavioral problems, and support needs. The heterogeneity of people with ID implies a large sample is needed to perform randomized control trials (RCTs) when analyzing the effects of interventions that are implemented but, at the same time, it is challenging to recruit large samples of participants. In addition, due to individual differences, the effects of an intervention may differ between persons. In RCTs, these individual benefits and variations may remain unnoticed[42] and, therefore, for this heterogeneous group, these types of study designs cannot be justified[43]. For this population, to examine what works for whom, when, and under which conditions may provide information that is more valuable and meaningful. Therefore, a multiple baseline design may be a strong and feasible alternative for examining effectiveness of interventions when groups are heterogeneous[44,45]. In such studies, multiple baseline measurements are performed in order to determine if possible effects can be attributed to the intervention whereby participants are their own control group.

Another methodological challenge in the research field of people with ID is the lack of the use of evidence-based theoretical models[46]. Theoretical models that are evidence based may lead to measuring instruments and outcome measures. For example, a questionnaire to assess the attitude of DSPs towards physical activity was developed based on the TDF[2,7], and the concept attitude was used as one of the outcome measures in **Chapter 6** of this thesis. The underlying theoretical model of that instrument to assess attitude is a framework that is used to gain knowledge about the presence of conditions to support a healthy lifestyle and was originally developed for the general population[2]. This demonstrates that such theoretical approaches can also be used effectively to evaluate interventions for DSPs who support people with moderate to profound ID.

Finally, awareness of the ethical dilemmas concerning involving participants who are not able to provide written consent for participation themselves is however challenging[46]. Persons with more severe ID are not able to provide informed consent themselves, and therefore, written consent is provided by legal representatives (such as a family member or a curator) on behalf of those individuals. Despite the careful way of asking consent, it is possible that the person concerned shows that he or she does not want to participate. The

well-being of people with moderate to profound ID is paramount in giving informed consent for the participation in research. However, research to gain knowledge and to support these vulnerable persons cannot be conducted without them. In this thesis, next to DSPs, persons with moderate to profound ID also participated in the studies. Though they cannot give consent for the research study themselves, they were able to indicate if they wanted to be audio-visually recorded, for example, with gestures or facial expressions. These expressions need to be considered when doing research with these individuals. For example, data collection can be stopped with an indication from a person who knows the participant well and that he or she seems to be expressing not wanting to be recorded. During a study, the willingness of people with moderate to profound ID to participate in research needs to be monitored which requires specific attention from DSPs and researchers.

Future research

For future research, the effectiveness of BCTs should be investigated for people with moderate to profound ID in order to examine the outcomes of the use of BCTs to improve physical activity and healthy nutrition with an effect study. This could address the question of which of the promising and mostly used BCTs we identified would be effective in promoting healthy nutrition and physical activities. Due to the heterogeneity within the group of people with ID, the effectivity of BCTs may initially be explored with case studies to identify which BCTs work for the individual with ID in their specific context. This knowledge gives insights into the use of BCTs for specific groups of people with ID.

Considering the importance of the levels of the ecological model, an integrated and personalized intervention for healthy lifestyle should be developed focusing on intrapersonal, interpersonal, institutional, community, and public policy levels[37,38]. Based on the promising results reported in this thesis of the training and education program, this program should be a component of such an integrated intervention aiming at improving healthy lifestyle support on the interpersonal level. Health care professionals should be able to compose a personalized intervention because the target group is heterogeneous in terms of degree of ID and, for example, health and motor problems. It should focus on all of the levels of the environment such as the interpersonal role of DSPs and their attitude as well as characteristics of the residential facility.

Recommendations

Education

- Use the training and education program developed in this thesis to include a focus on healthy lifestyle for people with moderate to profound ID in the professional education of DSPs.

Education and Practice

- Create interprofessional collaboration in both professional education and clinical practice to stimulate a learning community in which knowledge and skills are shared, coordinated, and integrated to support a healthy lifestyle for people with moderate to profound ID.

Practice

- Use the training and education program for DSPs to improve healthy lifestyle support that is available at www.dekrachtengebundeld.nl.
- Use BCTs consciously to motivate people with moderate to profound ID for healthy lifestyle behavior.
- Evaluate the attitude of DSPs with the attitude questionnaire in order to offer and adapt interventions meeting the needs of DSPs and as part of continuous improvement of the quality of lifestyle support.

Policy

- Evaluate the competences for DSPs regarding physical activity and healthy nutrition established by the Dutch Association of ID care provider services.
- Provide continuous and specific attention for people with moderate to profound ID to implement healthy lifestyle behavior and education in daily routines.

Future research

- Examine the effectiveness of BCTs for the support of physical activity and healthy nutrition.
- Develop an integrated and personalized intervention focusing on all levels of the ecological model including the training and education program of this thesis.

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Appendices

Samenvatting (Summary in Dutch)

Eenvoudig lezen samenvatting (Easy to read summary in Dutch)

Dankwoord (Acknowledgements in Dutch)

Research Institute SHARE: previous dissertations

Samenvatting (Summary in Dutch)

Inleiding

Mensen met een matige tot zeer ernstige verstandelijke beperking hebben veelal een ongezondere leefstijl dan de algemene bevolking, zoals te weinig beweging en ongezonde voeding. Ook de consequenties van een ongezonde leefstijl voor hun gezondheid zijn groter dan in de algemene bevolking. Een gezonde leefstijl heeft juist veel voordelen, ook voor mensen met een verstandelijke beperking, zoals: gezondheidswinst, positieve effecten op gedragsproblemen, alertheid en kwaliteit van leven.

Mensen met een matige tot zeer ernstige verstandelijke beperking hebben ondersteuning nodig van anderen, zoals naasten en professionals. Deze ondersteuning richt zich op alle aspecten van het leven, waaronder ook leefstijl. In Nederland krijgen mensen met een matige tot zeer ernstige verstandelijke beperking vaak ondersteuning van zorgorganisaties. In deze ondersteuning spelen begeleiders een belangrijke rol. Begeleiders hebben kennis en vaardigheden nodig om mensen met een verstandelijke beperking te ondersteunen, ook wat betreft leefstijlondersteuning. Echter, begeleiders geven aan dat ze kennis en vaardigheden voor leefstijlondersteuning missen als het gaat om gezonde voeding en beweging van mensen met matige tot zeer ernstige verstandelijke beperking. Welke kennis en vaardigheden ze precies missen en op welke wijze ze deze kunnen verwerven, is tot dusver niet bekend. De studies in dit proefschrift richten zich daarom op het bevorderen van een gezonde leefstijl van mensen met een matige tot zeer ernstige verstandelijke beperking door de leefstijlondersteuning van begeleiders te verbeteren.

Ondersteuning van begeleiders

In **hoofdstuk 2** is in kaart gebracht wat begeleiders nodig hebben om een gezonde leefstijl bij mensen met een matige tot zeer ernstige verstandelijke beperking te bevorderen. Begeleiders (n=28) zijn geïnterviewd met een protocol gebaseerd op een theoretisch kader van Michie en collega's. Dit evidence-based theoretisch kader is een veel gebruikt raamwerk om kennis op te doen over welke domeinen aandacht nodig hebben om gedrag te beïnvloeden. Uit de resultaten van deze studie komt dat begeleiders in de volgende domeinen ondersteuning nodig hebben: (1) omgeving en hulpmiddelen, (2) sociale/professionele rol en identiteit, (3) sociale invloed, (4) vaardigheden en (5) kennis. Hierbij gaven begeleiders aan dat ze met name ondersteuning nodig hebben vanuit de omgeving en hulpmiddelen. Binnen dit domein speelt de beschikbare tijd, omgaan met de

verschillende seizoenen en het gezonde leefstijl beleid in de organisatie een belangrijke rol.

Eén van de vaardigheden om een gezonde leefstijl te ondersteunen is het stimuleren van mensen met een matige tot zeer ernstige verstandelijke beperking door middel van gedragsveranderingstechnieken. Dit zijn manieren om leefstijl te veranderen. Een manier om gedrag te veranderen is het bedenken van deeltaken om gedrag op te delen in kleinere stappen die gemakkelijker uit te voeren zijn, bijvoorbeeld: '*til eerst je hoofd maar op, dan leg ik je arm goed en kun je daarna omdraaien*'. We weten echter nog niet of gedragsveranderingstechnieken worden ingezet door begeleiders binnen hun leefstijlondersteuning. In **hoofdstuk 3** is onderzocht of en welke gedragsveranderingstechnieken gebruikt worden door begeleiders om gezond leefstijlgedrag voor beweging en voeding van mensen met een matige tot zeer ernstige verstandelijke beperking te ondersteunen. Hiervoor zijn 18 begeleiders geobserveerd in de dagelijkse praktijk met behulp van audiovisuele opnames. Voor het coderen van gedragsveranderingstechnieken is een lijst gebruikt met 42 verschillende technieken (Coventry Aberdeen London gereviseerd, CALO-RE-NL). Uit de resultaten blijkt dat begeleiders 33 van de 42 gedragsveranderingstechnieken gebruiken. De meest gebruikte technieken zijn: 'feedback op uitvoering leefstijlgedrag', 'uitleggen leefstijlgedrag', 'samendoen', 'uitvoering belonen', 'vooruitgang belonen', 'omgeving veranderen', 'deeltaken bedenken', 'oefenen' en 'voordoen'. Er zijn verschillende technieken gebruikt om gezond leefstijlgedrag te bevorderen, maar negen technieken worden het meest gebruikt. De technieken die begeleiders inzetten worden mogelijk onbewust gebruikt. Door het expliciet inzetten van gedragsveranderingstechnieken en dit met elkaar te delen kunnen meer begeleiders hiervan profiteren in de begeleiding van gezond leefstijlgedrag. Daarnaast hebben begeleiders vaardigheden nodig om meer verschillende technieken in te zetten. Bewustwording over het gebruik van gedragsveranderingstechieken helpt om tegemoet te komen aan de behoefte van begeleiders om hun cliënten beter te kunnen ondersteunen.

De manier waarop begeleiders mensen met matige tot zeer ernstige verstandelijke beperking ondersteunen wordt mede bepaald door hun attitude. De attitude wordt gevormd door de gedachten en gevoelens van een persoon ten aanzien van leefstijl, bijvoorbeeld hoe belangrijk ze gezond leven vinden voor mensen met een verstandelijke beperking en of ze zich ondersteund voelen door hun leidinggevenden. Als begeleiders positief denken over leefstijlondersteuning lukt het beter om deze ondersteuning te implementeren in de dagelijkse ondersteuning. In eerder onderzoek is een vragenlijst ontwikkeld om de attitude van begeleiders over beweging te meten. Er is echter ook behoefte aan een vragenlijst

bestaand uit items die tezamen de attitude van begeleiders over voeding op een valide en betrouwbare manier in kaart brengen. Daarom is in **hoofdstuk 4** een vragenlijst ontwikkeld en geëvalueerd of de afzonderlijke items bijdragen aan de attitude die wordt gemeten. Een bestaande attitude vragenlijst gericht op beweging is aangepast naar een vragenlijst gericht op voeding. De vragenlijst is ingevuld door 31 begeleiders. De betrouwbaarheid van de vragenlijst was goed. De resultaten laten zien dat elk item bijdraagt aan de attitude die gemeten is. De interne validiteit lijkt dus veelbelovend, ondanks de kleine steekproef. Dit onderzoek resulteerde in een korte attitude vragenlijst voor begeleiders over voeding die in de dagelijkse praktijk gebruikt kan worden voor evaluatie, en voor het ontwikkelen, verbeteren of aanpassen van interventies aan de behoefte van begeleiders.

Ontwikkeling leertraject

Scholing kan de kennis en vaardigheden van begeleiders verbeteren, tegelijkertijd kan dit zorgen voor een positievere attitude over leefstijl. Er is nog geen onderwijs voor begeleiders ontwikkeld om kennis en vaardigheden op te doen over leefstijlondersteuning van mensen met een matige tot zeer ernstige verstandelijke beperking. Gebaseerd op de kennis vanuit de eerste hoofdstukken, is in **hoofdstuk 5** beschreven hoe een leertraject is ontwikkeld voor begeleiders om een gezonde leefstijl voor mensen met een matige tot zeer ernstige verstandelijke beperking te ondersteunen. 'Intervention Mapping' is gebruikt als theoretisch raamwerk om het leertraject voor begeleiders te ontwikkelen. Dit onderzoek heeft geresulteerd in een op theorie gebaseerd leertraject bestaande uit een e-learning en teambijeenkomsten. In de e-learning komen de volgende thema's aan bod: kennis en bewustwording van beweging en gezonde voeding voor mensen met matige tot zeer ernstige verstandelijke beperking. Na de e-learning volgen drie teambijeenkomsten met de volgende thema's: sociale/professionele rol en identiteit, vaardigheden (gedragsveranderings-technieken), en sociale invloed, omgeving en hulpmiddelen. Gedurende het leertraject wordt er aandacht besteed aan structurele aandacht voor leefstijl en duurzaamheid. Het leertraject kan individueel aangepast worden aan de leerbehoeften van begeleiders en de mensen met een verstandelijke beperking die ze ondersteunen. Een volgende stap is de uitvoering van een procesevaluatie en een haalbaarheidsstudie.

Implementatie en evaluatie leertraject

Hoofdstuk 6 beschrijft de implementatie in de dagelijkste zorgpraktijk en de evaluatie van het ontwikkelde leertraject. Het implementatieproces is onderzocht met een 'mixed method design'. Hierbij lag de focus op: het proces van de implementatie en de toepasbaarheid van en tevredenheid over het leertraject in de praktijk. De resultaten laten zien dat de tijd om begeleiders en mensen met een matige tot zeer ernstige verstandelijke beperking te werven 9 maanden was. Het leertraject is geïmplementeerd bij vier zorglocaties (begeleiders: n=32, mensen met een verstandelijke beperking: n=24). De e-learning is doorlopen door 81% van de begeleiders, 72-88% hebben de teambijeenkomsten bijgewoond, en 34-47% hebben de toepassingsopdrachten afgerond. Over het algemeen is het leertraject uitgevoerd zoals bedoeld. Begeleiders raden het leertraject aan bij collega's, ook al hadden enkelen moeite met de tijdsinvestering. Afstemming over wederzijdse verwachtingen was belangrijk voor de toepasbaarheid van en tevredenheid over het leertraject. Kijkend naar de veranderingen na het leertraject zijn de doelen van begeleiders behaald, en hun attitudes met betrekking tot een gezonde leefstijl zijn significant verbeterd na drie maanden. Een statistisch significante verbetering is gevonden voor voeding van mensen met een verstandelijke beperking, dit betekent dat ze na het leertraject meer voeding vanuit de aanbevolen richtlijnen vanuit het voedingscentrum hebben genuttigd. Voor beweging zijn geen veranderingen gevonden. Het leertraject kon voldoende worden geïmplementeerd en ondanks barrières met betrekking tot de tijdsinvestering en wederzijdse verwachtingen heeft het leertraject geresulteerd in veranderingen voor zowel begeleiders als de leefstijl van mensen met een matige tot zeer ernstige verstandelijke beperking. Het leertraject is daarom een veelbelovende interventie waarmee begeleiders kennis en vaardigheden op doen over leefstijlondersteuning van mensen met een matige tot zeer ernstige verstandelijke beperking.

Discussie en aanbevelingen

In **hoofdstuk 7** worden de resultaten van dit proefschrift in het perspectief van onderwijs, praktijk en de bredere omgeving beschreven. Dit heeft geleid tot de volgende aanbevelingen:

- Het leertraject dat ontwikkeld is in dit project dient een onderdeel te worden van de opleiding die begeleiders krijgen, omdat begeleiders nog onvoldoende toegerust zijn om een gezonde leefstijl te ondersteunen voor mensen met een matige tot zeer ernstige verstandelijke beperking. Daarbij kunnen gedragsveranderingstechnieken onderdeel worden van gezond leefstijl onderwijs. Deze technieken zijn effectief voor

de algemene bevolking, maar kunnen ook ingezet worden bij mensen met een matige tot zeer ernstige verstandelijke beperking.

- De attitude van begeleiders met betrekking tot voeding kan geëvalueerd worden met de attitude vragenlijst. Op basis van de uitkomsten kunnen interventies worden aangeboden en aangepast op de behoefte van begeleiders. De vragenlijst kan worden afgenomen als onderdeel van een continue verbetering van de kwaliteit van gezonde leefstijl ondersteuning.
- Interprofessioneel samenwerken kan helpen bij het effectief en efficiënt ondersteunen op het gebied van leefstijl. Gedragswetenschappers, fysiotherapeuten, diëtisten en artsen voor verstandelijk gehandicapten kunnen samen met begeleiders kennis delen over hoe bijvoorbeeld beweging ondersteund kan worden. Hierbij kan ook de inzet van gedragsveranderingstechnieken afgestemd worden om een gezonde leefstijl te ondersteunen.
- Voor veranderingen op het gebied van leefstijl in de dagelijkse praktijk en in de opleiding van begeleiders dient in de competentieprofielen van begeleiders aandacht te zijn voor de ondersteuning van voeding en beweging.
- Vanuit leefstijlbeleid verdienen mensen met een matige tot zeer ernstige verstandelijke beperking specifieke aandacht vanwege de ondersteuning die zij nodig hebben vanuit hun omgeving en het verhoogde risico dat ze hebben op een ongezonde leefstijl.
- Voor de leefstijlondersteuning die begeleiders bieden moet de bredere omgeving ook ondersteunend zijn. Vanuit het project De Krachten Gebundeld is ook een omgevingsscan ontwikkeld om in kaart te brengen hoe gezond leven van mensen met een matige tot zeer ernstige verstandelijke beperking ondersteund wordt vanuit de omgeving. De omgevingsscan kan worden ingezet om inzicht te krijgen in de sociale, fysieke, financiële en organisatorische middelen voor beweging en voeding. De omgevingsscan kan samen met het leertraject worden ingezet om een gezonde leefstijl te ondersteunen. De producten zijn te vinden op: www.dekrachtengebundeld.nl.
- Verder onderzoek is nodig naar de effectiviteit van gedragsveranderingstechnieken bij mensen met een matige tot zeer ernstige verstandelijke beperking. Daarnaast is het van belang om de effectiviteit van het leertraject te bepalen binnen een geïntegreerde en gepersonaliseerde interventie die zich richt op alle niveaus van het sociaal-ecologisch model.

Conclusie

Uit dit proefschrift blijkt dat begeleiders met name ondersteuning vanuit de omgeving en hulpmiddelen nodig hebben om een gezonde leefstijl te begeleiden. Daarnaast gebruiken begeleiders (onbewust) negen gedragsveranderingstechnieken het meest om een gezonde leefstijl te bevorderen. Voor de implementatie van leefstijlondersteuning kan de attitude van begeleiders, naast de vragenlijst gericht op beweging, nu ook gemeten worden met behulp van de attitude vragenlijst gericht op voeding. Op basis van de ondersteuningsbehoefte van begeleiders is een leertraject ontwikkeld dat een veelbelovende interventie blijkt om leefstijlondersteuning die begeleiders geven te verbeteren.

Makkelijk lezen samenvatting (Easy to read summary in Dutch)

Door: Annelies Overwijk, Anneke van der Cruijsen en Henk Jansen

Hoofdstuk 1

Mensen met een verstandelijke beperking helpen bij gezond leven

Waar gaat dit boek over?

In dit boek staan vijf onderzoeken.
Deze onderzoeken gaan allemaal over het helpen van gezond leven van mensen met een matige tot zeer ernstige verstandelijke beperking.
Met gezond leven bedoelen we: gezond eten, drinken en bewegen.

Waarom dit onderzoek?

Mensen met een matige tot zeer ernstige verstandelijke beperking hebben in hun leven hulp nodig van anderen.
Ook voor gezond leven hebben ze hulp nodig.
Mensen met een matige tot zeer ernstige verstandelijke beperking bewegen vaak weinig en eten en drinken vaak ongezond.
Door ongezond leven hebben ze vaker problemen met hun gezondheid, bijvoorbeeld ondergewicht en overgewicht.
Het verbeteren van een gezond leven heeft veel voordelen:

- Langer gezond blijven.
- Beter omgaan met je gevoelens.
- Meer meekrijgen van wat er om je heen gebeurt.
- Je lekkerder voelen.

Wie of wat kan helpen bij een gezond leven:

- Mensen dicht bij de persoon met een verstandelijke beperking.
  Bijvoorbeeld: familie en begeleiders.
- Zorgorganisaties.
- De maatschappij.
- Mensen die regels maken voor de organisaties.

In Nederland helpen begeleiders vaak bij gezond leven, daarom hebben ze een belangrijke rol voor mensen met een verstandelijke beperking.
Bijvoorbeeld: begeleiders helpen bij het kiezen van eten en drinken.
Ook met beweging hebben mensen met een verstandelijke beperking vaak hulp nodig.
Om goed te kunnen helpen moet begeleiders kennis hebben over gezond leven en hoe ze hiermee kunnen helpen.
Het is ook belangrijk hoe begeleiders zelf denken en voelen over gezond eten, drinken en bewegen.
Begeleiders zeggen dat ze niet genoeg weten en kunnen om te helpen bij gezond leven.
Daarom wordt in dit boekje uitgezocht hoe de hulp van begeleiders voor een gezond leven verbeterd kan worden.

Doel van het onderzoek

Het doel van dit onderzoek is het verbeteren van de hulp van begeleiders, zodat ze mensen met een matige tot zeer ernstige verstandelijke beperking beter kunnen helpen bij gezond leven.

Dit onderzoek is gedaan in vijf stappen:

Eerst kijken we naar:

1. Wat hebben begeleiders nodig om mensen met een verstandelijke beperking te helpen bij gezond leven?
2. Wat doen begeleiders om mensen met een verstandelijke beperking te helpen bij gezond leven?

Daarna:

3. Een vragenlijst maken over hoe begeleiders denken en voelen over gezond eten en drinken voor mensen met een verstandelijke beperking.
4. Een cursus maken voor begeleiders over gezond leven.
5. Het gebruiken van een cursus door begeleiders om mensen met een verstandelijke beperking te helpen bij gezond leven.

In het laatste hoofdstuk van dit boek vatten we de uitkomsten samen en geven we tips.

Hoofdstuk 2

Gezond leven: wat hebben begeleiders nodig om mensen met een verstandelijke beperking te helpen?

Waar gaat dit onderzoek over?

Mensen met een verstandelijke beperking eten vaak ongezond en bewegen te weinig.
Ze hebben hulp nodig van begeleiders bij gezond leven.
Met gezond leven bedoelen we: gezond eten, drinken en bewegen.
Om mensen met een verstandelijke beperking goed te kunnen helpen hebben begeleiders ook hulp nodig.
In dit onderzoek praten we met begeleiders over: wat heb je nodig om anderen te helpen bij gezond leven?

Wat hebben begeleiders gezegd?

We hebben gepraat met 28 begeleiders.
Begeleiders zeggen dat ze de volgende onderwerpen lastig vinden:

1. Omgeving en hulpmiddelen

- Het weer: hoe beweeg je als het regent? Hoe eet je gezond als het warm is?
- Tijd: Er is weinig tijd om te helpen bij gezond leven.
- Aandacht: Soms is er vanuit de zorgorganisatie niet genoeg aandacht voor gezond leven.

2. Op welke manier begeleiders helpen bij gezond leven en hoe ze denken over gezond leven

- Hoe ga je om met wat andere begeleiders vinden van gezond leven?
- Wie moet keuzes maken over gezond leven? Mensen met een verstandelijke beperking zelf of de begeleider?

3. Wie begeleiders helpen

- Hoe kunnen begeleiders samenwerken met familie van mensen met een verstandelijke beperking en anderen.
  Bijvoorbeeld: vrijwilligers of andere begeleiders.

4. Wat begeleiders kunnen

- Hoe kunnen we mensen met een verstandelijke beperking aanmoedigen om gezond te leven?
- Hoe kunnen we hulp geven zodat het past bij wat iemand wil en nodig heeft?

5. Wat begeleiders weten

- Kennis over gezond leven voor mensen met een verstandelijke beperking.

Tot slot:

Begeleiders hebben een belangrijke rol bij het helpen van mensen met een verstandelijke beperking.

De meeste hulp is nodig in de omgeving.
Voor gezond leven is hulp nodig in:

- Tijd voor gezond leven.
- Omgaan met het weer.
- Dat zorgorganisaties opschrijven hoe ze helpen bij gezond leven.

Een cursus kan begeleiders helpen in de ondersteuning van mensen met een verstandelijke beperking.

Hoofdstuk 3

Wat doen begeleiders om mensen met een verstandelijke beperking te helpen bij gezond leven

Waar gaat dit onderzoek over?

Mensen met een verstandelijke beperking hebben hulp nodig van hun begeleiders om gezond te leven.
Met gezond leven bedoelen we: gezond eten, drinken en bewegen.

- Begeleiders hebben gezegd dat ze het moeilijk vinden om mensen met een verstandelijke beperking aan te moedigen om gezond te leven.

- Er zijn verschillende manieren om te helpen.
  Dit noemen we gedragsveranderingstechnieken.
  Er bestaan 40 gedragsveranderingstechnieken.
  Een voorbeeld hiervan is: uitleggen hoe iemand iets kan doen.

- Begeleiders gebruiken de manieren om aan te moedigen nog niet altijd.
  Ook zijn de manieren om te helpen misschien moeilijk voor mensen met een verstandelijke beperking.

- We weten nog niet of de manieren van helpen ook gebruikt kunnen worden bij mensen met een matige tot zeer ernstige verstandelijke beperking.

Wat hebben we gedaan?

We hebben gekeken hoe begeleiders helpen bij gezond leven.
De begeleiders werken bij verschillende zorgorganisaties.
We hebben begeleiders gefilmd op drie verschillende dagen.
We hebben de films teruggekeken en geteld welke manieren om aan te moedigen werden gebruikt.

Wat hebben we gezien?

Alle begeleiders gebruiken manieren om te helpen bij gezond leven.
Van alle manieren die er zijn om bij gezond leven te helpen hebben begeleiders de meeste gebruikt.

Er is ook gekeken naar twee andere manieren om te helpen:

- 'Dat je iets samendoet', en
- 'De begeleider verplaatst iemand zelf of voorwerpen'.
  Voorwerpen zoals: een beker op een dienblad.

Deze manieren zijn het meest gebruikt:

- Vertellen hoe iemand iets heeft gedaan.
- Uitleggen hoe iemand iets kan doen.
- Dat je iets samendoet.
- Iets zeggen of geven nadat iemand iets goeds heeft gedaan.
- Iets zeggen of geven om door te gaan waar iemand mee bezig is.
- De begeleider verplaatst iemand zelf of voorwerpen.
  Voorwerpen zoals: een beker op een dienblad.
- Kleine stappen voor gezond leven bedenken en doen.
- Gezond leven samen oefenen.
- Gezond leven voordoen.

Tot slot:

Begeleiders gebruiken verschillende manieren om te helpen bij gezond leven.
9 manieren worden het meest gebruikt.
Mensen die meer hulp nodig hebben krijgen ook andere hulp bij gezond leven.

Bijvoorbeeld:

- 'Dat je iets samendoet', en
- 'De begeleider verplaatst iemand zelf of voorwerpen'.
  Voorwerpen zoals: een beker op een dienblad.

Het kan begeleiders helpen om ze te vertellen dat ze al veel goed doen.
Dit geeft ook vertrouwen.
Zeker omdat we weten dat begeleiders het moeilijk vinden om mensen met een verstandelijke beperking te helpen bij gezond leven.
We weten nu nog niet of deze manieren om te helpen bij gezond leven ook goed werken.
Dat moeten we nog onderzoeken.

Hoofdstuk 4

Een vragenlijst over hoe begeleiders denken en voelen over gezond eten en drinken voor mensen met een verstandelijke beperking

Waar gaat dit onderzoek over?

Mensen met een verstandelijke beperking hebben hulp nodig van hun begeleiders om gezond te leven.
Hoe begeleiders denken en voelen is belangrijk voor de hulp die ze geven aan mensen met een verstandelijke beperking.
Met gezond leven bedoelen we: gezond eten, drinken en bewegen.

Er is nog geen vragenlijst om te kijken hoe begeleiders denken en voelen over gezond eten en drinken.
In dit onderzoek is een vragenlijst gemaakt en uitgetest om te kijken of de vragenlijst goed te gebruiken is.

Wat hebben we gedaan?

Een vragenlijst voor beweging is aangepast voor gezond eten en drinken.
31 begeleiders hebben deze vragenlijst ingevuld.
Daarna hebben we uitgetest of de vragenlijst goed te gebruiken is.

Wat hebben we gezien?

De vragenlijst is goed te gebruiken voor begeleiders om te kijken hoe ze denken en voelen over gezond eten en drinken voor mensen met een verstandelijke beperking.

Tot slot:

De vragenlijst is goed, maar er is wel meer onderzoek naar nodig.
Met een grotere groep begeleiders kunnen we kijken of de vragenlijst dan ook nog goed te gebruiken is.

De vragenlijst is kort en kan makkelijk worden gebruikt.
De vragenlijst kan gebruikt worden om vaker te kijken hoe begeleiders denken en voelen over gezond eten en drinken.
De vragenlijst kan ook gebruikt worden voor het aanpassen van bijvoorbeeld cursussen aan wat begeleiders nog meer nodig hebben.

Hoofdstuk 5

Een cursus maken voor begeleiders over gezond leven

Waar gaat dit onderzoek over?

Mensen met een verstandelijke beperking hebben hulp nodig van hun begeleiders om gezond te leven.
Met gezond leven bedoelen we: gezond eten, drinken en bewegen.

Begeleiders vinden het moeilijk om mensen met een verstandelijke beperking te helpen bij gezond leven.
Ze hebben verteld wat zij nodig hebben.
Maar er is nog geen goede cursus voor gezond leven voor begeleiders.
Wij hebben daarom een cursus voor begeleiders gemaakt.

Wat hebben we gedaan?

De volgende mensen hebben meegedacht bij het maken van de cursus: mensen met een verstandelijke beperking, verwanten, begeleiders, leraren, leerlingen, makers van onderwijs, en mensen die veel weten over gezond leven.

We hebben een stappenplan gebruikt om de cursus te maken.
Dit stappenplan bestaat uit zes stappen:

1. Wat hebben begeleiders nodig?
2. Doelen van de cursus.
3. Manieren om de doelen te bereiken.
4. Plan van wat je doet in de cursus.
5. Beschrijven hoe de cursus wordt gebruikt.
6. Beschrijven hoe uitgezocht wordt hoe de cursus ging en wat het oplevert.

Tot slot:

We hebben een cursus gemaakt voor begeleiders om mensen met een verstandelijke beperking te helpen bij gezond leven.

De cursus bestaat uit twee stappen:

1. Informatie over gezond eten, drinken en bewegen via de computer.
2. Cursusbijeenkomsten met een team van begeleiders over:
    - Hoe begeleiders denken over gezond leven en op welke manier ze hierbij helpen,
    - Manieren om mensen met een verstandelijke beperking te helpen,
    - Hoe de omgeving en hulpmiddelen helpen bij gezond leven, en mensen die begeleiders helpen, denk hierbij aan: familie of andere medewerkers.

De cursus kan aangepast worden aan wat de begeleiders en de mensen met verstandelijke beperking die ze begeleiden nodig hebben.
De volgende stap is: uitzoeken hoe de cursus ging; wat kan er beter? En helpt de cursus?

Hoofdstuk 6

Het gebruiken van een cursus voor begeleiders om mensen met een verstandelijke beperking te helpen bij gezond leven

Waar gaat dit onderzoek over?

Mensen met een verstandelijke beperking hebben hulp nodig van hun begeleiders om gezond te leven.
Met gezond leven bedoelen we: gezond eten, drinken en bewegen.

Een cursus kan begeleiders helpen om goede hulp te geven.
Er is een cursus gemaakt om te helpen bij gezond leven.
In dit onderzoek wordt deze cursus gebruikt.
En er wordt gekeken of de cursus goed werkt.

Wat hebben we gedaan?

De cursus bestaat uit twee stappen:

1. Informatie over gezond eten, drinken en bewegen via de computer.
2. Cursusbijeenkomsten met een team van begeleiders over:
    - Hoe begeleiders denken over gezond leven en op welke manier ze hierbij helpen,
    - Manieren om mensen met een verstandelijke beperking te helpen,
    - Hoe de omgeving en hulpmiddelen helpen bij gezond leven, en mensen die begeleiders helpen, denk hierbij aan: familie of andere medewerkers.

De cursus is gebruikt bij 4 zorgorganisaties.
We hebben gekeken hoe dit is gegaan.
Bijvoorbeeld hoe begeleiders denken en voelen over een gezond leven.
Ook hebben we gekeken of mensen met een verstandelijke beperking gezonder zijn gaan leven.

Wat hebben we gezien?

Het is gelukt om de cursus bij 4 zorgorganisaties te geven.
De cursus is gebruikt zoals is bedacht.
De doelen van de cursus zijn gehaald.

Hoe begeleiders denken en voelen over gezond leven is beter na de cursus.
Begeleiders vertellen dat de cursus past bij wat ze nodig hebben om te helpen bij gezond leven.

Mensen met een verstandelijke beperking zijn gezonder gaan eten en drinken na de cursus.
Voor beweging zijn er geen verschillen gevonden.

Begeleiders vinden wel dat de cursus veel tijd neemt.
Het is ook belangrijk om voor de cursus te weten wat er in de cursus zit.

Tot slot:

De cursus kan worden gebruikt.
We hebben ontdekt dat de cursus begeleiders veel kan helpen bij gezond leven voor mensen met een verstandelijke beperking.
Na de cursus gaat het beter bij begeleiders en mensen met een verstandelijke beperking.
De cursus kan meerdere keren worden gebruikt, ook in een kortere vorm.
Bijvoorbeeld als er nieuwe begeleiders op een groep zijn.

Hoofdstuk 7
Alle hoofdstukken samen

Wat was ons doel?

Het doel van dit onderzoek was het helpen bij gezond leven van mensen met een matige tot zeer ernstige verstandelijke beperking door het verbeteren van de hulp van begeleiders.

Wat weten we nu?

- Dit zijn de punten die begeleiders nodig hebben om te helpen bij gezond leven van mensen met een verstandelijke beperking:
  de omgeving en hulpmiddelen,
  afspreken hoe je helpt bij gezond leven,
  steun van bijvoorbeeld familie,
  kunnen helpen bij gezond leven,
  weten wat gezond leven is.
- Begeleiders gebruiken al manieren om te helpen bij gezond leven.
- Een vragenlijst voor begeleiders die gaat over denken en voelen over gezond eten en drinken is goed te gebruiken.
- De cursus over gezond leven kan begeleiders veel helpen bij gezond leven voor mensen met een verstandelijke beperking.

Tips voor de opleiding van begeleiders

- Laat de cursus over gezond leven een deel zijn van de opleiding die begeleiders krijgen.
  De cursus is te vinden op internet: www.dekrachtengebundeld.nl.
- Laat begeleiders in hun opleiding al leren welke manieren er zijn die ze kunnen gebruiken om te helpen bij gezond leven.
- Laat begeleiders en andere mensen die in de zorg werken van elkaar leren.
  Samen werken is hiervoor nodig.
  Samen werken kan al tijdens de opleiding, zodat je kennis kunt delen met elkaar.

Tips voor mensen die in de zorg werken

- Laat de omgeving helpen bij gezond leven.
  De omgevingsscan kan hierbij helpen.
  De omgevingsscan gaat over: hoe mensen helpen, hoe plekken en hulpmiddelen helpen, en hoe plannen en geld helpen bij gezond leven.
  Gebruik de omgevingsscan samen met de cursus om te helpen bij gezond leven.
- Gebruik de manieren die je hebt geleerd in de cursus om te helpen bij gezond leven in de dagelijkse zorg.
- Kijk met de vragenlijst uit dit onderzoek hoe begeleiders denken en voelen over gezond eten en drinken.
  Voor beweging is er eerder al een vragenlijst gemaakt.
  Verbeter zo steeds de hulp bij gezond leven.
  Dit helpt om bijvoorbeeld een cursus te geven die aansluit bij wat begeleiders nodig hebben.

Tips voor mensen die regels maken voor de organisaties

- Kijk wat begeleiders moeten kunnen om te helpen bij gezond leven.
  En zet dit de afspraken over de opleiding van begeleiders.
  Zodat begeleiders beter opgeleid worden om te helpen bij gezond leven.
- Heb steeds aandacht voor mensen met een verstandelijke beperking zodat gezond leven onderdeel wordt van hun dagelijks leven.

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