

25-1-2016

BACHELOR THESIS

THE EFFECT OF HEALTHY LIFESTYLE INTERVENTIONS FOR SCHOOL-AGED CHILDREN ON EMPOWERMENT AND SOCIAL PARTICIPATION

A literature review | Natalia Westermann

Inhoud

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Foreword

Before you lies my bachelor thesis “The effect of healthy lifestyle interventions for school-aged children on empowerment and social participation”. This entails a thorough literature review that investigates the current evidence on this topic. This thesis was written as a part of my bachelor ‘Food and Health’ at the Wageningen University.

This thesis was written for the GGD Noord- en Oost-Gelderland, as the topic is of interest within the context of the JOGG program. My supervisors for this thesis were Sofieke Van Oord-Jansen and Judith Heinrich (GGD) and Annemien Haveman (WUR), who provided support and guidance during the whole process.

Hereby, I want to thank my supervisors for all the support and pleasant collaboration. This eventually resulted in this bachelor thesis, which I am proud of.

I wish you an enjoyable read.

If you have questions and/or want to contact me, you can find my email address down below in this page.

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Groningen, 25 January 2016

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H.1 Introduction

Background

As from January 2015 the Dutch Youth Care system is decentralized and transformed, making the municipalities responsible for all the youth care services (Bosscher, 2014). This shift of responsibility from the national government to the municipalities should result in a more 'efficient, coherent and cost-effective' youth care system (Bosscher, 2014). To be more cost-effective the Dutch Youth Institute states that preventive youth care should take a more prominent role. By stimulating 'eigen kracht' (English: empowerment) the need for care can be prevented in children, as the need for help in solving problems should drop. For the municipalities this could mean a reduced demand for youth care and costs. Also the existence of a social network can play an important role in prevention (Nederlands Jeugd Instituut). By mobilizing and reinforcing a social network social participation in vulnerable youth is promoted (Kruijswijk, Van der Veer, Brink, Calis, Van de Maat & Redeker, 2014). Social participation in youth is a way to develop personal skills and competences (Nederlands Jeugd Instituut), which could also lead to a reduction in demand on youth care.

Besides dealing with the transition in Youth Care, the municipalities combat the increase in obesity in children through health programmes such as Jongeren Op Gezond Gewicht (JOGG), a derivative of the successful French healthy lifestyle program EPODE (Ensemble, Prévenons l'Obésité Des Enfants). This JOGG program is designed for municipalities to set and implement their own 'local' goals and actively collaborate with local organisations and companies to achieve these goals. Their target group ranges from toddlers to high school children (0-19 years). The mission is to actively engage this group in activities to stimulate and educate them on what a healthy life style entails. To monitor results JOGG has set a main goal: a 2% increase in the percentage of children (0-19 years) with a healthy weight relative to a certain date. The municipality of Zwolle started the JOGG program in the Netherlands in 2010. Already positive figures show that in certain municipality areas, for instance in Zwolle, the percentage primary school children with obesity has dropped from 12.1% in 2009 to 10.6% in 2012. Other areas report similar results, which indicates that to-date the JOGG program has a positive effect in reducing children's weight (JOGG, 2012).

The primary goal of the JOGG intervention is promoting healthy lifestyle behaviours and thereby helping children to maintain or achieve a healthy weight. The aim of this study is to investigate if interventions such as JOGG could potentially positively influence the psychosocial constructs 'eigen kracht' and 'social participation' in children. If the JOGG interventions would affect the children not only physically but also mentally, this could potentially be a strategy that municipalities can use to their advantage to achieve maximum preventative results.

As this is a literature study, the terms 'eigen kracht' and 'social participation' need to be better defined in order to find relevant literature. In the next chapter 'theoretical framework', the terms will be defined and explained. The latter also applies for the JOGG intervention program so that an as accurate as possible comparison can be made.

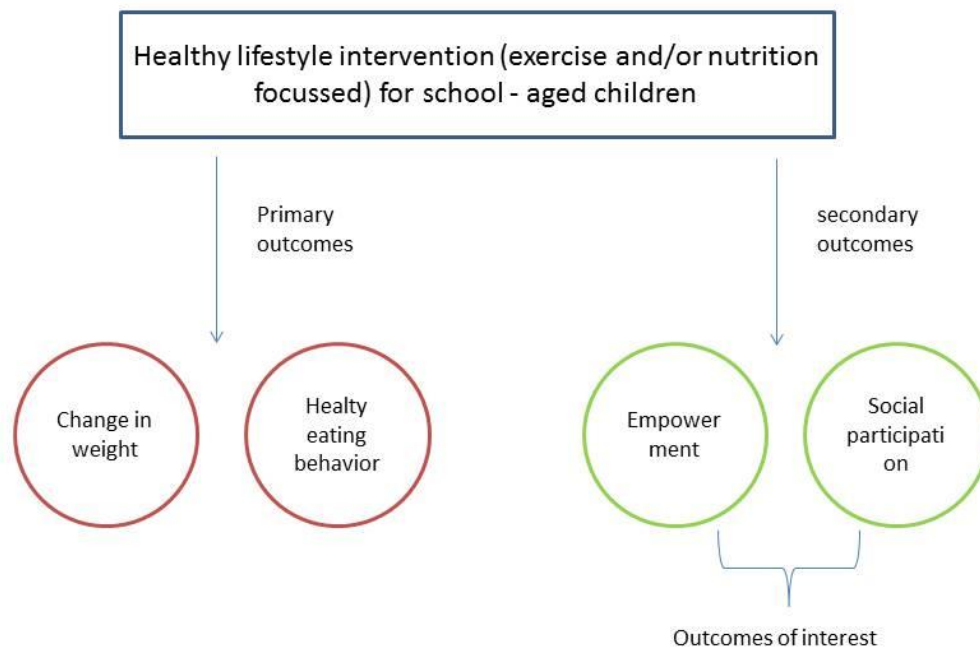


Fig. 1 Conceptual framework of this study, which investigates if healthy life style interventions in school-aged children (6-18 y) affect the possible secondary outcomes 'empowerment' and 'social participation'.

H. 2 Theoretical framework

Empowerment

‘Eigen kracht’ is a complex term as it is a word created by the Dutch Youth Care system. ‘Eigen kracht’ can be defined as ‘the ability of an individual to shape his/her life or situation in the most optimal way and to solve problems or make them endurable’ (Jumelet & Wenink, 2012). To conduct literature research an English equivalent is searched for the term ‘eigen kracht’, which is found in the term ‘empowerment’ (Laffra & Nikken, 2013). Zimmerman & Rappaport (1988) defined empowerment as ‘a construct that links individual strengths and competencies, natural helping systems, and proactive behaviors to matters of social policy and social change’. Although empowerment is a multi-level construct, for this study the individual level is the most interesting as this covers the aspects of participatory behavior and feelings of efficacy and control (Zimmerman, 1990). According to Zimmerman & Rappaport (1988) ‘the individual experience of empowerment is expected to include combination of self-acceptance and self-confidence, social and political understanding, and the ability to plan assertive role in controlling resources and decisions in one’s community’. As empowerment is not a one-dimensional construct but contains several psychometric domains, Zimmerman & Rappaport (1988) used multiple indices to represent these three established domains in psychological empowerment: cognitive, personality and motivational. General self-efficacy was used as element for the cognitive component, as self-efficacy is a person’s belief about his ability to produce effects (Bandura, 1994). Morton & Montgomery (2013) state that next to self-efficacy also self-esteem is a frequently assessed construct regarding empowerment. This equation of the constructs self-esteem and self-efficacy with empowerment falls in the popular framework to limit empowerment to an individual’s feelings of influence and control (Gullan, Power & Leff, 2013). Therefore, besides empowerment, the two constructs self-efficacy and self-esteem were used in the current literature search to establish a solid framework to cover ‘empowerment’. As like self-efficacy and self-esteem, self-concept is a frequent used and desired outcome in educational and psychological situations (Marsh, 1990). Self-concept is closely related to other psychological constructs, like self-efficacy. As the construct self-concept is sometimes referred to as self-esteem (Marsh), it shows how overlaying and closely related these constructs are. To increase the scope for the search of interesting interventions, the construct self-concept is also added to the framework as this is related to self-esteem as well as self-efficacy (see further ‘Relation self-esteem, self-efficacy, and self-concept’).

Self-esteem

Self-esteem is defined as “positive and negative attitudes towards oneself” (Coopersmith, 1967), which is one of the many definitions of this construct. In the field of psychology, self-esteem is viewed as ‘a feeling of self-appreciation’ (Hosogi, Okada, Fujii, Noguchi & Watanabe, 2012). Self-esteem is a dynamic construct in an adolescent’s psychological functioning and is seen as an important part of a young mind’s self-understanding (Moksnes, Moljord, Espnes & Bryne, 2010). In this study, the focus will be on general self-esteem, as this is most closely linked to empowerment.

Self-efficacy

Bandura (1997) defined perceived self-efficacy as “people’s belief in their capabilities to perform a specific action required to attain a desired outcome”. Self-efficacy can be task and domain specific, but researchers (Schwarzer & Jarusalem, 1995) also established a generalized version of self-efficacy. For this study, the focus is on general self-efficacy, as this is most closely related to ‘empowerment’.

Task and domain specific self-efficacy focus on the belief of the person in his or her capabilities in a certain task or domain. General self-efficacy, however, may explain a broader range of human behaviors and coping outcomes when the context is less specific (Luszczynska, Scholz & Schwarzer, 2005).

Self-concept

Self-concept can be seen as the global over-arching view of self (Shavelson & Bolus, 1982). Self-concept can be divided into two categories: academic and non-academic concepts. Non-academic self-concept was divided into social, emotional, and physical self-concepts, (Shavelson, Hubner & Stanton, 1976). The academic self-concept was divided in specific subareas 'Math', 'English', etc. (Marsh, 1990). In this study, the focus is only on the non-academic concepts, as these are more related to 'empowerment'.

Relation self-esteem, self-efficacy, and self-concept.

As many constructs regarding a person's 'self' have been conceptualized, it is not surprising that constructs overlap. Researchers suggest that, when looking at the construct self-concept, it is related to self-efficacy. Bong and Clark (1999) state that self-concept includes a self-efficacy component, with Hughs, Galbraith and White (2011) stating that self-concept could classify self-efficacy. When looking at the link between self-esteem and self-concept, Buthler and Gasson (2005) state that "self-concept is regarded as synonymous with self-esteem". Although the linkage between the constructs is debated in the literature, for this study the three constructs are treated separately. By adding the construct self-concept in the framework, the scope of our research could be broadened to establish findings regarding the construct 'empowerment' in children and adolescents.

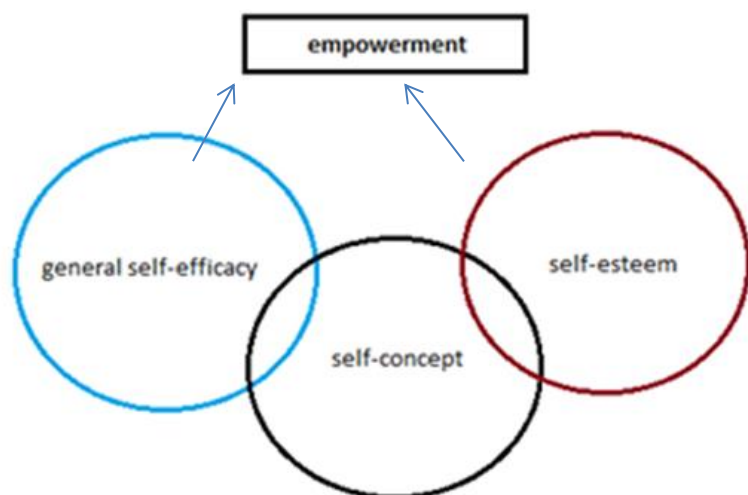


Fig 2. Conceptual framework of the construct 'empowerment'

Social participation

Social participation is a broad term with the most basic definition being 'just participating'. This participating can be in school settings, sport settings, family setting etc. The participation element is essential for the personal development and social skills in youth. Studies suggest that youth who

participate in social settings, like out-of-school programs, improve on social attachments, perceived control, self-confidence and support due to these programs (Zimmerman, Stewart, Morrel-Samuels, Franzen & Reischl, 2011).

De Boer et al (2013) included activities such as sports club participation, participation in extracurricular activities, participation in voluntary work, time spent amongst peers, engagement in other social activities, and participation in neighborhood activities as description of participation for children with health problems (4-25 years). This age range predominantly covers all school attending children and young people making the switch from school life to work life (De Boer et al., 2013). This description of social participation by Boer et al. (2013) is the definition of interest for this study, but is too broad to investigate. Therefore, for the construct 'social participation', this study uses the four key themes established by Koster, Timmerman, Nakken, Pijl and Van Houten (2009) to embody the construct 'social participation', which they established for their Social Participation questionnaire (SPQ) for children with special needs in the age range six to nine years. Koster et al. (2009) identified four key themes to cover 'social participation', based on research in 62 articles: in "friendships/relationships", "contacts/interactions", "pupil's social self-perception", and "acceptance by study mates". This predominantly covers the 'social relationships' part of 'social participation', leaving 'participating in leisure activities' out of the search scope.

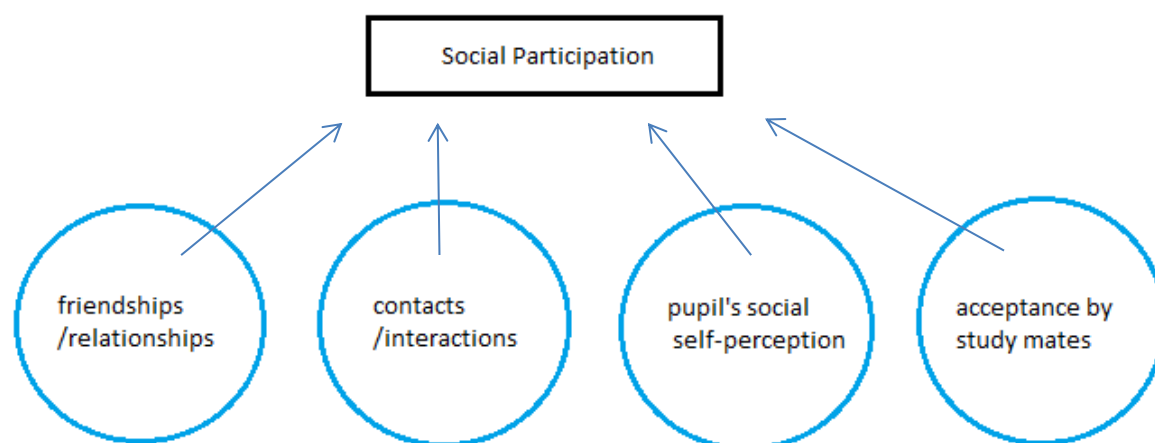


Fig. 3 conceptual framework of the construct 'social participation'

Healthy Lifestyle Intervention

This study needs to have a clear picture of what type of intervention can be indicated as a 'JOGG program' and what not, in order to make an accurate comparison.

The JOGG programs focus on encouraging children to adopt a healthy lifestyle by targeting different health behaviors and social environments. The 'gezonde schoolkantine' and the 'gezonde sportkantine' campaigns aim to surround children with healthy food by substituting the unhealthy snacks with healthy ones, like fruit and vegetables, in key environments in a child's life. By making them more aware of the 'right' foods to eat, JOGG aims to reach its goal of reducing children's weight by influencing their diet. Many programs and activities have already been organized that stimulate children to get out more and to engage in different forms of physical activity. These

activities can be linked to schools, neighborhood centers, sport clubs or other organizations which want to collaborate with JOGG to reach the ultimate goal: a healthy society.

Therefore, the following criteria were defined to establish which interventions are included in this study:

- aim: to improve weight and/ or eating behavior and/or physical activity behavior of school-aged children or adolescents

- Location: school-based or out-of-school

- program elements: any degree of physical activity in peer group settings or any form of stimulating healthy eating behavior in peer group settings

Research Questions

The research questions:

1. What is the effectiveness of healthy lifestyle programs for school aged (6-18 y) children in achieving empowerment?
2. What is the effectiveness of healthy lifestyle programs for school-aged (6-18 y) children in achieving social participation?

H.3 Literature review

Search criteria

This literature study was focused on finding empirical data to examine to what extent empowerment and social participation in children and adolescents are influenced by healthy lifestyle interventions. These healthy lifestyle interventions include dietary behaviour interventions and exercise promoting interventions. For finding English articles the database Scopus was used. In order to facilitate extrapolation of these results to the JOGG intervention, Dutch articles/interventions were searched with Google and the Nederlands Jeugd Instituut (NJI) site. The articles used in this paper were found in the period of May- November 2015.

Inclusion criteria:

- Peer reviewed articles
 - Articles concerning Western (first world), developed countries
 - Articles concerning children, ranging from the age 6-18
 - Articles concerning interventions to improve weight and/ or eating behavior and/or physical activity behavior in organized /unorganized setting
 - Articles concerning social participation (including both studies using quantitative as qualitative measurements)
- OR
- Articles concerning empowerment or self-esteem or self-efficacy or self-concept

The criteria of including only peer reviewed articles guarantees quality research. Only articles in which researchers investigated Western world populations were included. This decision was made to make the results and the recommendations based on the results as applicable as possible for future evaluation studies of JOGG (-related) interventions. Only articles that covered children aged 6-18 were included, as the JOGG interventions are focussed on this age group. The intervention elements need to be similar to the JOGG intervention, containing aspects of promoting physical activity and/or healthy eating behaviour. These aspects, specifically regarding physical activity, need to be actively engaging the participant in physical behaviour. Studies in which the intervention only provides educational lessons and lectures regarding physical activity were not included, as this is not compatible with any of the JOGG interventions. Also studies promoting physical activity and/or dietary behaviour and including extensive lessons to improve self-esteem/self-efficacy/self-concept were left out. This was done, because these lessons could affect the causal relation between physical activity/dietary behaviour and the outcomes of interest. This would lead to possible incorrect conclusions, when this study investigates the effect of physical activity/dietary behaviour on 'empowerment' and 'social participation'. An important inclusion criteria is the inclusion of articles which look at qualitative as well as quantitative data. The construct 'social participation' is not yet a well-established construct of investigation in this target group, meaning validated questionnaires are not available yet. Qualitative findings can be measured using questionnaires, focus groups, interviews and other methods.

Exclusion criteria:

- Articles that are not yet published/ in press
- Articles containing a population which suffers of any specific kind of illness or disease.
- Articles that measured empowerment qualitatively

Considering the target population of the JOGG campaign, it need to be mentioned that interventions focussed on a population with any kind of specific disease or illness should be excluded, with one exception. As JOGG aims to increase health behaviours, the overweight/obese population is an important target group. Therefore studies focussing on overweight and obese children and adolescents are included. For this study, interventions regarding 'empowerment' which look at qualitative findings are also excluded. This is done, because the three concepts (self-concept, self-esteem, self-efficacy) used to cover the construct 'empowerment' have validated questionnaires to look at.

Search terms

The following terms were used to search for relevant articles. To maximize the number of relevant articles a set of synonyms was used for the terms children, empowerment, social participation and healthy lifestyle intervention.

These were:

For children: Child*, Adolescent* and Youth

For healthy lifestyle interventions: 'lifestyle', 'physical activity', 'nutrition', 'eating behaviour'.

For Empowerment: 'self-efficacy', self-esteem' and 'self-concept'

For social participation: 'social participation', 'social relationship*', 'social inclusion', and 'self-perception'

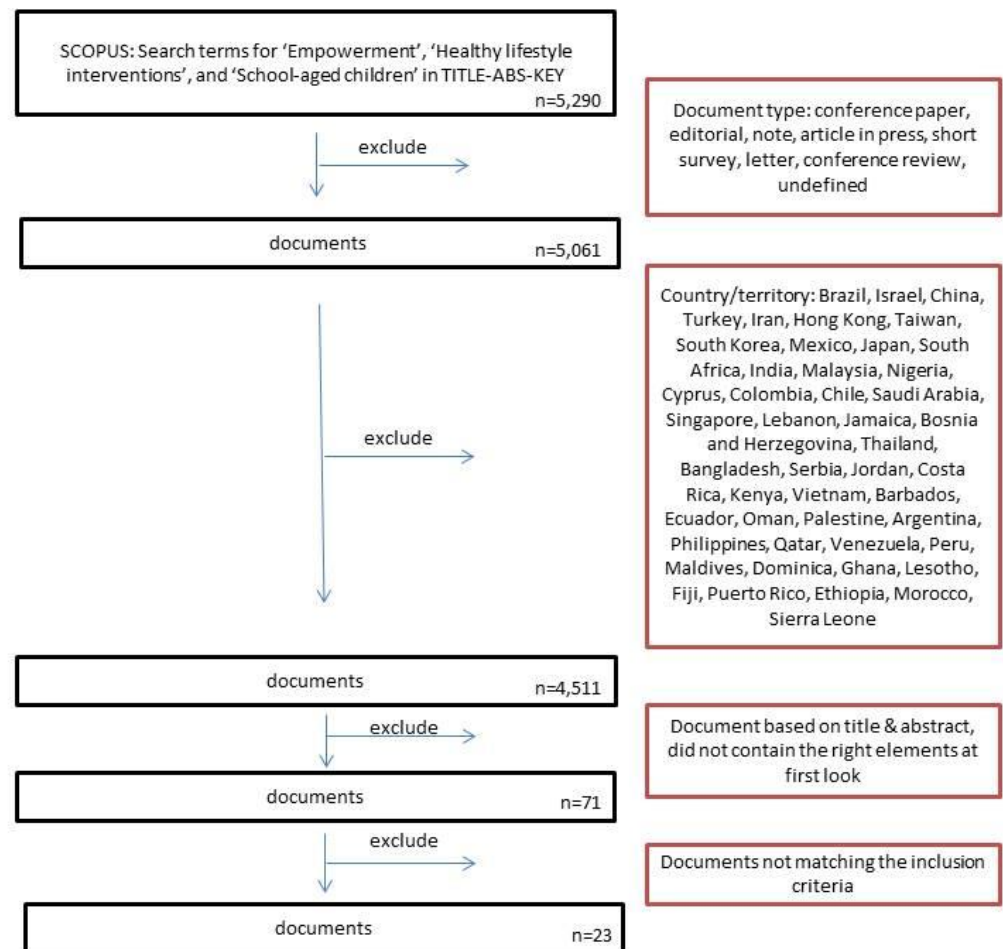


Fig 4. Flow chart of the articles inclusion procedure for the construct 'empowerment'

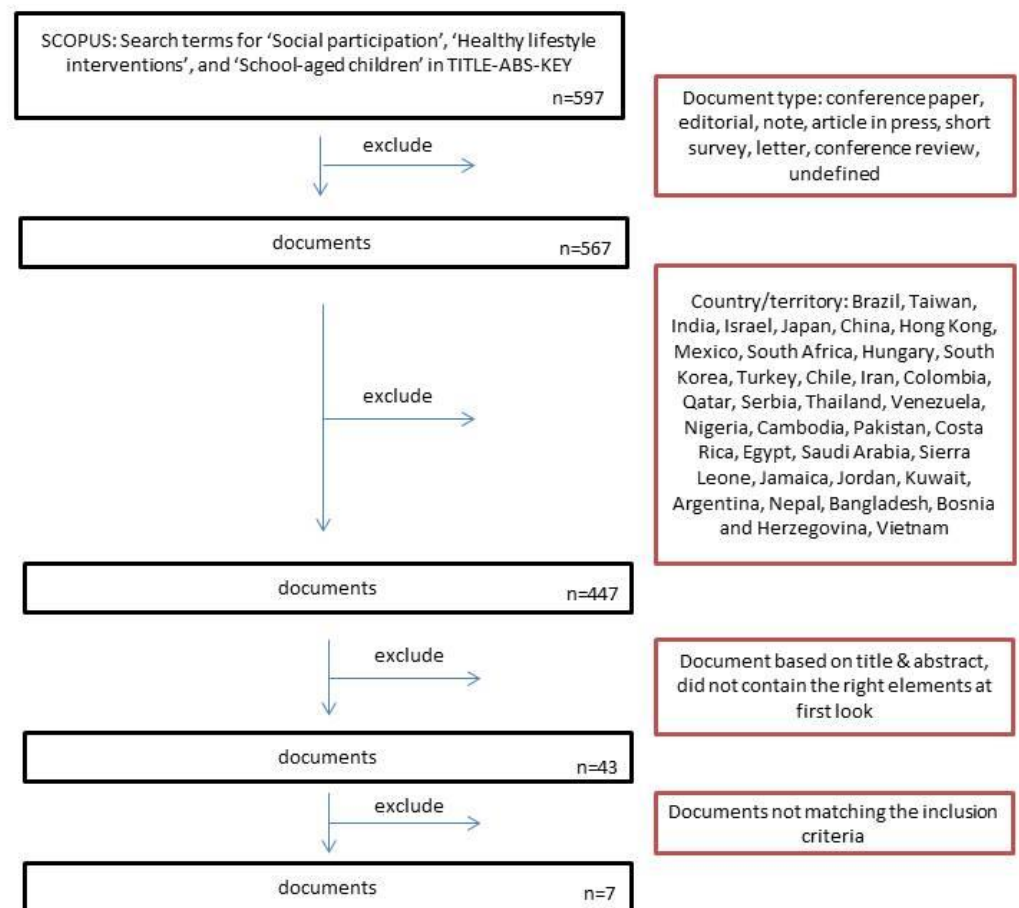


Fig 5. Flow chart of the articles inclusion procedure for the construct 'social participation'

H.4 Results

Empowerment

A total of 4511 articles were found using the constructs 'self-efficacy', 'self-esteem' and 'self-concept' to cover 'empowerment'. Of these, 23 studies matched the inclusion criteria (Table 1) of which the majority investigated the construct self-esteem (n= 20); while there were only 3 studies that measured the constructs self-efficacy (n=1), self-concept (n=1), and both self-esteem and self-concept (n=1). The majority of studies focussed on both sexes (n=15), whereas there were seven studies solely focussing on women and one on men. The target group of overweight and obese youth was specified in seven studies, the other studies focussed on youth in general. The United States of America was the country where most of the studies were conducted (n=10), followed by the United Kingdom (n=7), Sweden (n=2), Portugal (n=1), Canada (n=1), Germany (n=1) and Australia (n=1). All the psychosocial constructs of interest were quantitatively measured.

Self-esteem

Fourteen studies measured the construct 'self-esteem', all using validated questionnaires (see table 1 in the appendix). The most renowned quantitative tool to measure the construct 'self-esteem' is the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965). The scale contains 10 items in which the "feeling that one is good enough" is assessed. The self-esteem scale is seen as a uni-dimensional measure of global feelings of self-worth, as self-esteem is considered a judgement about oneself as a whole (Butler & Gasson, 2015).

The Rosenberg Self-Esteem Scale (1965) was the most frequently used questionnaire (n=8) to measure self-esteem. Newer editions of the RSES were also used, the RSES (1979) (n=4). Other questionnaires used to measure 'self-esteem' were Harter's Self-Perception Profile for Adolescents (n=3), Student Self-Concept Scale (n=1), Physical self-description questionnaire (n=1), and Children and Youth Physical Self-Perception Profile (n=1), Tennessee Self Concept : 2 child form (physical self-concept part) (n=1), Marsh's Physical Self-description Questionnaire (n=1) and KINDL-R questionnaire (n=1).

Elinder, Heinemans, Hagberg, Quetel, and Hagstromer (2012) investigated the impact of tailored action plans that were developed by school health teams. No results were found on psychosocial outcomes in students (boys and girls) after 2 years. The Stockholm County Implementation Programme (SCIP) was developed for schools to implement in order to improve eating habits, physical activity, self-esteem, and to promote healthy body weight in 6-16 year old children. The control group consisted of nine schools, who continued their 'daily routine'. The results showed no significant improvements in self-esteem in the intervention group. Similar to Elinder et al. (2012), Sahota, Rudolf, Dixey, Hill, Barth, and Cade (2001) investigated the effect of the active promoting lifestyle education in school (APPLES), which consisted of 'teacher training, modifications of school meals, and the development of school action plans designed to promote healthy eating and physical activity'. Ten schools were selected for the study and randomly assigned, with the control schools continuing their usual health program. After one (academic) year, the result showed a small significant increase in the domain global self-worth, compared to the control group. Lubans et al. (2012) investigated self-esteem as a secondary outcome in a 12-month multicomponent school-based obesity prevention program in 335 adolescent girls (12-14 y). The program included

components like enhanced school sport sessions, nutrition workshops and lunch-time physical activity sessions. The control group did not receive any form of program. The results showed that there were no significant changes in self-esteem post-intervention in the intervention group, which was consistent in the 12-month follow-up.

In an intervention targeting overweight children to be more active and to stimulate healthy behavior, the researchers (Weintraub, Tirumalai et al., 2008) used an 'active-placebo' control intervention as comparison. In this six-month soccer program, twenty-one children participated three-weekly for approximately 2.25 hours a session. The control intervention consisted of multiple meetings, pertaining nutrition and health education. Results show that in both intervention and control there is a slight increase in self-esteem but not significant. Faude et al. (2010) assessed the effects of a 6-months soccer program on 8-12 year old overweight children. The control group participated in a standard sport program, which also consisted of physical activities. The results show a statistically significant increase in self-esteem in both intervention and control group, with a larger effect in the intervention group. In the most recent intervention study pertaining to the sport soccer, Seabra et al. (2014) examined the effects of a 5-month soccer program on psychological status in overweight boys. The intervention group consisted of twelve overweight boys, while the control group consisted of eight overweight boys. The control and intervention group both participated in compulsory school physical education (PE) sessions (45-90 min). The intervention group received additional soccer lessons, 60-90 min four times a week. The program showed to be effective as significant positive changes were measured in perceived psychological status within the intervention group as compared to the control group.

The goal of the FitKids/FitFamilies intervention (Joesse, Stearns, Anderson, Hartlaub & Euclide, 2008) is to reduce and prevent overweight and obesity in children by promoting physical activity and dietary knowledge via 2 hour weekly sessions over twelve weeks in children and their parents. Improving the children's self-esteem was one of the outcomes of interest and results showed a significant increase in self-esteem. No control group was present in this study. The MEND program, which also targeted family with obese children, consisted of firstly a 9-week educational and physical activity program, followed by a 12-week free family swimming pass. The control group consisted of families who were placed on the waiting list. Post-intervention and after 6-month follow-up, results showed significant improvements in global self-esteem in the intervention group.

The Girls on the Run intervention (Debate & Thompson, 2005) investigated the effects of a 12-week community curriculum-based running program in 8-12 year old girls. Self-esteem was measured in 322 girls, the researchers found significant improvement in their self-esteem. They also investigated if results differed between race (white and non-white) and age group (8-10 y and 11-13 y), but for both variables the difference showed to be non-significant. The Girls In the Game (GIG) program, an after-school program, contained different sport and health education lessons across 30 weeks. Bohnert & Ward (2013) found no significant difference in self-esteem, as self-esteem levels continued to be stable during the year in both intervention and control group. The researchers also did a moderation analysis for self-esteem by analyzing it as a continuous variable to determine if the 8-12 year old girls with lower self-esteem rating possibly benefited more from the program. The results did not differ from the original results.

Likewise, the study of Schneider, Dunton, and Cooper (2008) was diverse in physical activity content and school-based. This study focused on 13-16 year old sedentary girls (n=120) who participated in 4 times/week supervised activities which varied from yoga lessons to basketball lessons over a period

of 9 months. The control group followed regular PE classes. The global self-esteem score increased for participants of both intervention and control group across the nine months, although no intervention effect was found. The 'Dance 4 your life' program (Connolly, Quin & Redding, 2011) assessed self-esteem in 14 year old girls (n=55) and found a statistically significant increase in self-esteem. The intervention contained one hour contemporary dance classes with the focus on building muscular strength, the duration of the program was between 5 and 12 h, with no control group for comparison. In another after-school dance program, which aimed to prevent weight gain in low-income African American girls, the results show a slight positive change in self-esteem, but not statistically significant (Robinson et al., 2010). The 8-10 year old girls (n=261) participated in a 12 month dance program, with daily sessions with 45-60 min of physical activity. The control group received an 'active-placebo' intervention, containing health education on nutrition, physical activity, and reducing cardiovascular and cancer risk.

Reed et al. (2013) investigated whether exercise environment has effect on children's self-esteem. The children completed two 1.5 mile timed runs, one in a 'green' setting, the other in an urban setting. Results show that irrespective of the setting, the 1.5 mile run had a positive effect on self-esteem. No significant difference on self-esteem effect between the settings was found. Another study investigating the effect of surroundings on the level of self-esteem in children was conducted by Barton, Sandercock, Pretty, and Wood (2015). This time the researchers compared playground sports (control) with nature-based orienteering during playtime (intervention) for one week. Results show no significant differences in self-esteem between groups, and also not between the control and intervention group. Through the use of playground marking and supportive playground assistants (Crust et al., 2012), the intervention intended to stimulate and thus increase physical activity 10-11 year old children (n=218). The playground markings consisted of painted lines and boxes. Twelve schools implemented the playground markings, while four schools functioned as control. The findings show no significant main effect in self-esteem, which means no significant difference was reported between the intervention group and the control group. Also the researchers investigated the interaction effects for the variables gender, time and intervention. All the interactions effect showed to be non-significant.

The Empower U intervention, containing exercise, nutritional, self-esteem and smoking interventions given at school, measured a significant increase in self-esteem after the 4-week intervention (Dowdy et al, 2013). There was no control group present in this study. The one month follow-up results showed that the improvement remained in the fifty-eight participants (10-13 y). Containing similar participant characteristics and also lacking a control group for comparison was the study of Ignico, Richhart, and Wayda (1999), who investigated a 10-week after-school physical activity program on children's activity level and self-esteem. The participant's age ranged between 8-11 years (n=21). The program consisted of a variety of physical activity games and activities, such as step-aerobics and circuit training. There were no significant improvement in self-esteem scores found pre-test to post-test as the scores changed only a little, but no negative change was observed.

The intervention investigated by Staiano, Abraham, and Calvert (2013) incorporated the game Nintendo Wii in their program to stimulate weight loss in overweight children of 15-19 years old (n=54). The researchers established two intervention groups: one where two peers team up to burn calories (Cooperative group), the other where two peers battle to see who burns the most calories (Competitive group). The control group performed their normal daily activities. After twenty weeks, the findings did not show any significant change in self-esteem in either interventions group. Fraser, Lewis, and Manby (2012) found positive results for self-esteem in overweight/obese school-age

children (5-16 y) who participated in multiple team-based physical activities. The increase was found to be statistically significant after the 48-week program. When the researcher looked at the difference between age groups, they found an on average higher effect of the program on self-esteem in the younger children (5-11 y).

Self-concept

Two studies investigated the effect of a healthy life style intervention on the construct 'self-concept'. Schneider et al. (2008) measured, next to global self-esteem, also global physical self-concept in sedentary female adolescents (14-15 y) who completed a physical activity program. The physical activity program showed no significant effect on global physical self-concept in the intervention group compared with the control group. They did however find a statistical significant increase in global physical self-concept within the intervention group for the girls who increased their cardiovascular fitness during the study. Remarkably, the reverse effect was found in the control group. The participants in the control group who did not increase their cardiovascular fitness during the study, did show a significant increase in their level of self-concept.

The second study investigated the effects of an after-school program on physical self-concept in 9-12 year old children (Annesi, 2005). The program was performed in two academic years, 2003 and 2005, and lasted for 12 weeks, containing cardiovascular activity sessions 3 days/week with 45 minutes per session. The control group were free to participate in physical activity for 30-45 min, this being predominantly unstructured and voluntary. Results show no significant improvements in physical self-concept score when compared to the control group. When looking at within-group changes over the 12-weeks, the intervention group of 2005 showed significant improvements in physical self-concept, this was not found for the 2003 intervention group.

Self-efficacy

Lindgren, Baigi, Apitzsch, and Bergh (2011) evaluated changes in self-efficacy due to an exercise program in non-physically active adolescent girls in the age range 13-19 years. Eight schools were randomly placed in either the intervention group or the control group, which resulted in 62 participants completing the program. The general self-efficacy score increased significantly in the intervention group and was also statistically different compared to the control group that did not receive the program. The effect of the peer-led healthy living program 'Healthy Buddies' (Santos et al., 2014) was assessed on the secondary outcome self-efficacy. The older children (9-12 y) 'taught' 30 min lessons on physical activity, healthy eating, and self-efficacy and body image to their younger peers (6-8 y) each week. The results showed significant improvements in self-efficacy in the younger students compared to the control group, while this effect was not found in the older students.

Overview empowerment

The results of the twenty-three studies did not show a clear-cut evidence that the interventions lead to improvements in 'empowerment' in school-aged children. Thirteen studies showed significant positive results for self-esteem scores, of which ten made use of a control group (Annesi, 2005; DiGiacchino et al., 2005; Faude et al., 2010; Fraser et al., 2012; Lindgren et al., 2011; Reed et al., 2013; Sacher et al., 2010; Sahota et al., 2001; Santos et al., 2014; Seabra et al., 2014) and of which three did not (Connolly et al., 2011; Dowdy et al., 2013; Joosse et al., 2008). On the other hand, the ten other studies showed no significant changes in the outcome measures of interest, of which nine made use of a control group (Barton et al., 2015; Bohnet & Ward, 2013; Crust et al., 2012; Elinder et

al., 2012; Lubans et al., 2012; Robinson et al., 2010; Schneider et al., 2008; Staiano et al., 2013; Weintraub et al., 2008) and of which one did not (Ignico et al., 1999).

Social participation

For social participation an initial 597 documents (fig. 5) were found, but after applying the inclusion/exclusion criteria only seven articles matched the set criteria (table 2 of the appendix). One questionnaire used for measuring social participation is the Social Skills Rating System. The Social Skills Rating System is an assessment tool used to examine pre-school, elementary, and secondary students on their level of social behavior. It measures the following three areas: social skills, problem behavior, and academic competence (in the Teacher report form). When measuring social skills, the rating system covers the scales: Cooperation, Assertion, Responsibility, Empathy, and Self-Control. The problem behavior subscales are: Externalizing problems, Internalizing problems, and Hyperactivity. The academic competence area only has one item (Community-University Partnership for the Study of Children, Youth, and Families, 2011). Vaz, Parsons, Passmore, Andreou, and Falkmer (2013) mention that this SSRS is one of the best norm-referenced behavior scales for use with children and youth because of its strong evidence for reliability and validity. This holds for research both in youth with or without disabilities and chronic illness. Two studies used the Social Skills Rating System (n=2), one used the Positive Youth Development Measure (n=1) and one study measured their results using the Self-Perception Profile for Children (n=1).

Interview/focus groups were conducted in three studies and, as mentioned above, four studies used questionnaires to measure the desired outcome. One study contained a qualitative as well as quantitative measurement. The majority of the studies investigated outcome measures in both boys and girls (n=4). One study only focussed on the female population (n=1), the other study only on the male population (n=1). Again there were studies focussing on the overweight/obese population (n=3). Two of the seven studies were conducted in the United Kingdom (n=2), the same amount of studies originated from the United States of America (n=2) and Canada (n=2).

Social acceptance

In the study performed by Watson et al. (2014) one of the secondary outcome measures was the child's self-perception. The GOALS family-based childhood obesity treatment intervention program consisted of two hour weekly group sessions across 6 months that covered physical activity, diet and behaviour change. The results show a significant increase from baseline to post-intervention and 12-month follow-up in social acceptance in the intervention group. The study did not use of a control group.

Social competence

Woodgate & Sigurdson (2015) used qualitative and quantitative measures to investigate 'The Five Cs' model in children in a school-based intervention of two years. The 5 C's stand for: Competence, confidence, connection, character, and caring. This study is interested in the element Competence & Connection. The element 'Competence' is defined as 'a positive view of one's actions in domain specific areas including social, academic, cognitive and vocational'. The social element is the one of interest regarding 'social participation' as the social competence concerns interpersonal skills. This falls into the scope which was set for 'social participation' (see fig. 3). Turning to 'Connection', this describes 'positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to

the relationship'. The program consisted of multiple workshops, such as the Healthy Food Workshop and the Heart gets Fit workshop. Remarkably, the Positive Youth Development measure (PYD.2) reported a slight decrease in 'Competence' and 'Confidence' scores, though not significant. The qualitative measures (focus groups and individual reflective journals) showed that the children perceived personal benefits from the HEART intervention, as children stated to feel more empowered to act healthy. The results of the qualitative measures were not elaborated upon, and there was no mention of any direct results regarding 'social participation'. Also the study did not make use of a control group.

Social network

Beaulac, Kristjansson & Calhoun (2011) studied the outcome measures in adolescents (n=67) between the age 11-16 years in the 13-week community-based Hip-Hip dance program. By using qualitative interviews the researchers assessed the perceived impact of the program on the participants. In focus groups, the parents and personnel were asked to give their view on the influence of the program of the children. The reported outcomes of interest, relevant to this study, were 'relationships' and 'behaviours'. All but one participant reported an increase in peer relationships. The participants also mentioned that not only was their social network expanded, but that it also increased in diversity. The researchers voiced their assumption, based on the children's reports, that the program also led the children to try new activities.

In the community-based intervention targeting overweight and obese school-age children the findings, regarding 'social participation', were assessed by using qualitative measures (Fraser et al., 2012). Through interviews the researchers found that the perceived impact of the program on the participants was positive regarding 'making new friends'. The researchers mention in their conclusion that the factor 'making new friends in an environment where they are treated equally' appears related to the success of the program.

Social Skills

In the Girls In the Game after-school program the researchers (Bohnert & Ward, 2013) used the Social Skills Rating System (SSRS) questionnaire to assess prosocial behaviour in minority, low income girls (8-12 y). The program consisted of several sport activities, all engaging the girls in physical activity. The result show no significant change in all the domains of SSRS scores (total, cooperation, assertion, empathy, and self-control). Jacobson & Melnyk (2012) performed a study which consisted of a 7-week program for fifteen 12 year old overweight and obese children and their parents. In this study, the SSRS was also used to assess the impact of the program on prosocial behaviour in their participants. Again, for all the domains of the SSRS questionnaire the results show no significant change in the participants. Though one effect was measured, the parent's report on the child's behaviour showed a significant increase in the SSRS score for self-control. This study, as was the case with the study of Bohnert & Ward (2013), both had a single arm intervention, thus lacking a control.

Social support

Staiano et al. (2013) measured, next to self-esteem, the level of peer support during the 20-week exergame (Wii Active) and measured a significant increase in both the Cooperative as the Competitive group compared to the control. There were no significant differences between the two interventions groups and the control group for social support.

Overview social participation

three studies showed significant positive results in the outcome measure of interest due to the intervention, of which none made use of a control group and of which three did not (Beaulac et al., 2011; Fraser et al., 2012; Watson et al, 2014). They investigated social acceptance (measured quantitatively), social network or peer relationships (twice measured qualitatively), and social support, respectively.

However, four studies did not show significant results, of which two made use of a control group (Bohnet & Ward, 2013; Jacobson & Melnyk, 2012) and of which one did not (Staiano et al., 2013; Woodgate & Sigurdson, 2015). Both times when the SSRS was used, no significant change was measured in social skills. Social competence and confidence, also measured quantitatively, even showed a decrease in score in the children.

Other interesting findings

Besides the main outcomes of interest, two of the total 30 studies revealed findings that could be of interest for further research, namely influence of the parents and environment/setting. These could be elements to consider when developing or implementing related healthy lifestyle interventions.

Parental influence

Fraser et al (2012) find that the parents were a big barrier in accessing the overweight or obese children as some of the parents were defensive and 'in denial'. They observed teachers being reluctant to recommend certain children to the program in fear of the potential reaction of the parents.

Also the studies Seabra et al. (2014) and Joosse et al. (2008) show that actively engaging the parents in the program could be a success factor, as in both studies the self-esteem scores increased significantly in the children.

In the study performed by Jacobson & Melnyk (2012) the children and parents filled in food diaries. The researchers noted that there was no increase in vegetables consumed by the child post-intervention, probably relating to the fact that only a few families consistently served their children vegetables.

Environment and physical activity

Change in setting can also affect the level of physical activity in children, as seen in the study performed by Wood, Gladwell & Barton (2014). The results indicate a significant environmental effect in both boys and girls on moderate-vigorous physical activity when comparing the 'field' (intervention) setting with the 'playground' (control) setting. Barton et al. (2015) also found a significant effect for moderate-vigorous physical activity in the participants when looking at setting. The intervention setting was green areas and fields around the school area, while the school ground with equipment to play with (ropes etc.) functioned as the control intervention.

H.5 Discussion/Conclusion

The motivation for this study was to investigate, by means of a literature review, if the JOGG program could have an impact on secondary outcomes (empowerment and social participation) in children and adolescents (6-18 years). This subject of interest was 'translated' into two specific research questions. The first specific research question was 'what is the effectiveness of healthy lifestyle programs for school aged (6-18 y) children in achieving empowerment?' More than 50% of the studies (13 of 23) showed significant positive effects, and 3 of the 10 remaining studies showed a non-significant increase in the outcome of interest. Even though one could regard the effect of the healthy lifestyle interventions as inconclusive, overall the trend is positive. Moreover, there were no studies which gave a negative effect.

As for the question 'what is the effectiveness of healthy lifestyle programs for school-aged children (6-18y) in achieving social participation?', again the studies showed mixed results. Three of the seven studies showed significant positive increases in the outcome of interest, but four studies did not. Furthermore, one of the four studies even showed a decrease in score. Therefore the answer to the question is that the effect of the healthy lifestyle interventions for school-aged children on social participation is inconclusive.

Empowerment

Based on the findings in the results, the elements which are discussed in this section are reassessment of the initial study constructs, the influences of interventions targeting mixed weight groups (overweight/obese and normal weight), the influences of targeting mixed gender groups, and explanations of findings of interest.

During the process of the study, the scope for the construct 'empowerment' showed a need for re-evaluation. This was especially the case for the construct global self-efficacy, which was one of the three constructs 'forming' empowerment. After assessing more specific literature on the subject, it appeared that global self-efficacy is not a construct used often in interventions as self-efficacy is normally applied to a specific task. Literature suggests to not use global self-efficacy as outcome of interest as this is too non-specific. Therefore, in future research this study suggests to leave global self-efficacy out of the scope of 'self-empowerment', and/or to consider adding relevant 'task' specific self-efficacy in the scope.

In all the three studies (Faude et al. (2010), Seabra et al. (2014), and Weintraub et al. (2008)) that used soccer as the intervention sport, the target group consisted of overweight or obese children. In the study of Seabra et al. (2014) the control group participated in regular physical education and did not receive the additional soccer practices. It is possible that offering sports activities to overweight/obese children together with normal weight children affects social participation and possibly affect the self-esteem levels in the overweight child in a negative way, due to the social marginalization which occurs to overweight and obese children (Straus & Pollack, 2003). Notably, the exclusiveness of the obesity group can potentially give the overweight participant a sense of acceptance and sense of belonging, as the intervention group in Faude et al (2010) also solely existed of overweight/obese children. In two studies (Fraser et al, 2012; Weintraub et al, 2008) the parents reported that their children felt more comfortable and confident in the environment with only children of the same weight. Additionally, the parents reported in interviews that they observed positive changes in self-esteem in their child, while the quantitative measures found a slight but non-

significant increase in self-esteem. This could implicate that making a distinction between overweight/obese children and normal weight children could make a difference in establishing an improved self-esteem for the overweight/obese children when organizing a sport or exercise related event for children & adolescents. Thus, this implication could be noteworthy for the JOGG program. Another element which could be (potentially) of interest is the preference differences between boys and girls. Research by Page, Cooper, Shiew & Jago, (2010) shows that boys are significantly more active, due to play, exercise or sport than girls starting from the age of ten. Additionally, the reasons to exercise start to differ slightly at that age between boys and girls, with girls focussing more on bodyweight control and shape while boys exercise predominantly for fitness (Furnham, Badmin & Sneade, 2002). Furthermore, girls perceive social and physical barriers in participating in mixed (boys and girls) active play (Pawlowski, Tjørnhøj-Thomsen, Schipperijn & Troelsen, 2014). For these reasons single sex interventions could potentially be fruitful.

Finally, the element team sport is one to highlight. The three soccer studies involved team sport in groups which were consistent in composition. Not only these studies showed a positive relationship with self-esteem, but this positive relationship also showed in a regression study performed by Pedersen & Seidman (2004). This positive relationship could emphasise the importance of sport clubs for children's achievement in self-esteem. (Gísladóttir, Matthíasdóttir & Kristjandóttir, 2013). Sport clubs also provide structure to the leisure activity, which appears to provoke less antisocial behaviour compared to unstructured leisure activity (Mahoney & Stattin, 2003). In that case, it may also be fruitful to cooperate with sport clubs when organising a sport/exercise events, as this could potentially lead to more exposure to sport clubs and thus potentially to more child subscriptions to sport clubs.

Social participation

The elements discussed are comprised of the limitations of the construct, measurement instruments, and explanations on findings.

First of all, this study used multiple constructs to cover 'social participation'. The outcomes 'social acceptance', 'social competence', 'social skills', 'social network', and 'social support' were used, measured qualitatively or quantitatively. This usage of such a diverse range of outcomes of interest may bring up the question to what extent one can draw conclusions on social participation based on only seven studies. It is important to underline that the 'social participation' area of research in children and adolescents currently is limited by making use of qualitative methods due to the lack of good quantitative methods, therefore exploration and validation on quantitative questionnaires is of interest.

The study of Woodgate & Sigurdson (2015) measured a decrease in score in social competence and confidence, which was a surprising finding. In this study, the Positive Youth Development Inventory (PYDI) was used which is a relatively new measurement (2012). This questionnaire has not been as extensively validated as for example the Rosenberg Self-esteem Scale. Measuring social participation is a relatively new area of research and not many validated questionnaires are currently available. This might explain the unexpected results in the study of Woodgate & Sigurdson (2015).

The study of Beaulac et al. (2011) and Fraser (2012) both showed positive results on self-esteem, but both studies lacked a control group. Under such circumstances one should question the strength of both studies. As the other four studies showed no significant results regarding social participation, it seems evident that the current evidence for the effect of healthy lifestyle interventions on social participation is unclear, and further research should be conducted to further investigate this

relationship.

Finally, although this study did not show that healthy lifestyle interventions for school-aged children promoted 'social participation', there is a supportive evidence that sport interventions are useful tools in promoting and building social capital and fostering community relationships (Skinner, Zakus & Cowell, 2008) and that after-school program participation appears to promote social behaviours and relationships (Mahoney, Larson, Eccles & Lord, 2009). Further research is needed to establish a solid evidence base for this positive relationship, as the relation between sports activity and social participations in children is difficult to prove due to the lack of valid questionnaires.

JOGG

The question remains to what extent these findings can be translated to the JOGG program.

The interventions that were included in this study (n=30) were very diverse in content, though they all predominantly covered physical activities and nutritional health behaviours sessions. However, most interventions in this study were well structured with frequent set sessions under organized supervision, while the JOGG interventions are more 'free' and one-off activities, thus without structural reoccurring 'sessions'. Therefore, the findings of the studies cannot be directly 'translated' but can function as the basis for further recommendations for the JOGG program.

Limitations

The number of relevant articles found already indicates that this study explores a relatively new field of research. The current literature on the relationships between healthy lifestyle interventions and 'empowerment' and 'social participation' can therefore not be substantiated. However, the growing interest in these relationships will likely stimulate the need for quality literature on preventive positive influence of empowerment and social participation in children and adolescents in upcoming years.

A number of studies lacked a control group, both for empowerment (Connolly et al., 2011; Dowdy et al., 2013; Ignico et al., 1999; Joosse et al., 2008; Watson et al, 2014), and social participation (Watson et al., 2015; Woodgate & Sigurdson, 2015; Beaulac et al., 2011; Fraser et al., 2012). Without a comparison group, non-program effects could not be adjusted for (to a certain extent), therefore affecting the power of these studies and thereby reducing the strength of the outcomes.

Although there is distinction between children (6-12 years) and adolescents (13-18 years) as subjects of interest in different studies, in this study the potential difference in effectiveness of interventions and outcomes were not separately investigated as this was not a study objective. However, this distinction could be of interest when investigating this subject, as researching the outcome measure specifically in children could be potentially more difficult due to their age.

Furthermore, this study only used the Scopus database to find relevant articles. This limited use of databases possibly resulted in the exclusion of relevant articles. For further research a wider range of databases is recommended.

Conclusion

The current literature study assessed the effect of healthy lifestyle interventions for children and adolescents (6-18 years) on the constructs 'empowerment' and 'social participation'. The findings demonstrate that physical activity and healthy lifestyle interventions appear to be positively associated with 'empowerment'. For 'social participation' however the evidence is not conclusive. With respect to the JOGG program, the study's findings give reason to recommend certain intervention activities to maximize JOGG impact on empowerment and social participation:

- parent involvement and especially engagement could benefit the child in achieving 'self-empowerment'
- when overweight and obese children are involved, an effort should be made to place the overweight/obese children in the same group in order to avoid possible scrutiny by normal weight children
- engage sport clubs in the activities to stimulate the children to join a sport club, thus stimulating long term participation
- consider when forming groups whether a single sex or a mixed gender group is most beneficial in the setting/activity so as to stimulate maximum engagement

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Appendix

Table 1: interventions found for construct 'empowerment' (n=23)

Researchers	Title intervention	Location	Description	Age group	Duration and evaluation follow-ups	Study design	Healthy lifestyle intervention components	Youth empowerment related outcomes	Questionnaire (of interest)	results
Elinder, Heinemans, Hagberg, Quetel & Hagströmer (2012)	A participatory and capacity-building approach to healthy eating and physical activity – SCIP-school: a 2-year controlled trial	Stockholm (Sweden), urban/rural	Programme to improve eating habits, physical activity, self-esteem, and promote a healthy body weight in children	6-16 years (N=1359)	2 years	Quasi-experimental study	Workshops regarding general school health practices, physical activity, mental health, and nutrition	Self-esteem	Harter's Self-Perception Profile for Adolescents	Significant increase
Reed, Wood, Barton, Pretty, Cohen & Sandercock (2013)	A repeated measures experiment of green exercise to improve self-esteem in UK school children	England, urban	Study aims to determine whether so called 'green exercise' affected changes in self-esteem differently to urban exercise	11-12 years (N=75)	2 days	Intervention	1.5 mile run	Self-esteem	Rosenberg self-esteem scale (1965)	Significant main effect on self-esteem
Seabra, Seabra, Brito, Krstrup, Hansen, Mota, Rabelo, Rego & Malina (2014)	Effects of a 5-month football program on perceived psychological status and body composition of overweight boys	Porto (Portugal), urban	Study assesses the effects of a 5-month intervention on the perceived psychological status in twelve boys	Mean age: 10,3 (N=20)	5 months	Controlled trial	Football classes and PA classes	Self-esteem	Rosenberg Scale (1979)	Significant improvement of self-esteem level
Dowdy, Alvarado, Atieno, Barker, Barrett, Carlton, Cheshire, Cooper, Eastridge, Grant, McHenry, Methvin, Murray, Ratcliff, Reynolds, Scott, Tidwell, Turley &	Empower U: effectiveness of an adolescent outreach and prevention program with sixth-grade boys and girls: a pilot study	Southern Eastern United States, urban	Study examines the results of the program 'Empower U', which aims to improve four key health-related behaviors: exercise, nutrition, body	11-13 y (N=63)	4 weeks (4 week follow up)	One group pre-test post-test design	45 min educational and participatory interventions	Self-esteem	Rosenberg Scale (1965)	Significant increase in self-esteem

Williamson (2013)										
Joose, Stearns, Anderson, Hartlaub & Euclide (2008)	Fit Kids/Fit Families: a report on a countywide Effort to promote Healthy behaviors	Washington County (US), urban	image, and smoking Study assesses the results of a multidisciplinary family system approach to weight management	6-15 y (N=68)	12 weeks	Intervention (no control)	Physical exercise and nutrition lessons	Self-esteem	Rosenberg Scale (1965)	Positive change in self-esteem
Debate & Thompson	Girls on the Run: Improvements in self-esteem, body size satisfaction and eating attitudes/behaviors	USA, urban	A curriculum based running program to assess the influences regarding psychological risk factors leading to disordered eating among girls who participate in sport	8-13 y (N=377)	12 weeks	Non-experimental pre-test post-test design	Running lessons	Self-esteem	Rosenberg Scale (1965)	Significant positive change
Bohnert & Ward (2013)	Making a Difference: Evaluating the Girls in the Game (GIG) After-School Program	United States (urban)	After-school program for low-income status girls to promote social-emotional development and reducing BMI and obesogenic behavior	8-12 y (N=76)	30 weeks	Randomized controlled trial	Traditional and non-traditional sport and fitness activities, nutrition education	Global self-esteem	Rosenberg Self-Esteem Scale (1965)	Self-esteem: remained stable in both groups, no change
Fraser, Lewis & Manby (2012)	Steps in the right direction, against the odds: An evaluation of a community-based programme aiming to reduce inactivity and improve health and morale in overweight and obese school-age	United Kingdom (urban)	Community-based intervention for overweight and obese children focusing on PA and nutritional education	5-16 y (N=325)	48 weeks	Cohort study	Team-based physical activities and group educational sessions for child and parent on healthy eating	Self-esteem	Rosenberg Self-Esteem Scale (1979)	Self-esteem: increased self-esteem, significant difference

	children									
Barton, Sandercock, Pretty & Wood (2015)	The effect of playground- and nature-based playtime interventions on physical activity and self-esteem in UK school children	England, urban and rural	Study investigates which playtime interventions are most effective at increasing moderate-to-vigorous physical activity and if this varies by school location	8-9 y (N=52)	One week	Pre-test post-test intervention study	Playing activities	Self-esteem	Rosenberg Scale (1965)	Positive change self-esteem
Ignico, Richhart & Wayda (1999)	The Effects of a Physical Activity Program on Children's Activity Level, Health-related Fitness, and Self-Esteem	Muncie (US), urban	Study to examine the effects of a physical activity program on children's activity and self-esteem	8-11 y (N=21)	10 weeks	Intervention	After-school activity program	Self-esteem	Student Self-concept scale	No significant change
Crust, McKenna, Spence, Thomas, Evans & Bishop (2014)	The effects of playground markings on the physical self-perceptions of 10–11-year-old school children	UK, urban	Study assesses the effects of playground markings on important indicators of psychological health, in order to also increase physical activity	10-11 y (N=218)	8 months	Intervention	Playground markings and complementary guidance to use them	Self-esteem	Children and Youth Physical Self-Perception Profile	No significant change
Santos et al. (2014)	Effectiveness of peer-based healthy living lesson plans on anthropometric measures and physical activity in elementary school students a cluster randomized trial	Canada (urban and rural)	Intervention investigating peer-based lessons on PA, healthy food and having a healthy body image.	6-12y (N=647)	Approx. 10 months (one academic school year)	Block randomized controlled trial	Aerobic fitness sessions, distinguishing nutritious from unhealthy food and beverages	self-efficacy	Standardized questionnaire developed by Healthy Buddies research group	Self-efficacy: significant improvement in the younger group, not in the older group

Connolly, Quin & Redding (2011)	Dance 4 your life: exploring the health and well-being of a contemporary dance intervention for female adolescents	London (United Kingdom), urban	Study assesses the physiological and psychological impact of contemporary dance classes on adolescent females.	14 y (N=55)	5-12 h	One-armed pre-test post-test design	Dance classes of 1 h	Self-esteem	Rosenberg Scale (1965) + (Hagger & Hein 2007)	Significant positive change in self-esteem
Schneider, Dunton & Cooper (2008)	Physical activity and physical self-concept among sedentary females: an intervention study	Southern California (United States)	Study investigates the impact on self-concept of a 9-month PA intervention among sedentary adolescent females	Mean age: 15 y (N= 120)	9 months	Non-randomized controlled trial	Special physical education classes	Global self-concept & self-esteem	Physical self-description questionnaire	Significant positive effect on both constructs
Lindgren, Baigi, Apitzsch & Bergh (2011)	Impact of a six-month empowerment-based exercise intervention programme in non-physically active adolescent Swedish girls	Southern Sweden, urban	Intervention based on increasing self-efficacy in girls by PA	13-19 y (N=110)	6 months	Pre-test post-test randomized controlled design	Different sport and exercise activities	General perceived self-efficacy	General Self-efficacy Scale & Social Barriers to Exercise Self-efficacy Questionnaire	General self-efficacy: statistically increased level of self-efficacy in intervention group
Lubans, Morgan, Okely, Dewar, Collins, Batterham, Callister & Plotnikoff (2012)	Preventing obesity among adolescent girls: one-year outcomes of the Nutrition and Enjoyable Activity for Teen Girls (NEAT Girls)	New South Wales (Australia), urban and rural	School-based obesity prevention intervention tailored for adolescent girls	12-14 y (N=294)	12 months + 12 months follow-up	Group randomized controlled trial	Nutrition workshops, enhanced school sport sessions, lunch-time PA	global self-esteem	Marsh's Physical Self-description Questionnaire	Self-esteem & self-perceptions remained relatively stable, no sign changes.
Faude, Kerper, Multhaupt, Winter, Beziel, Junge & Meyer	Football to tackle overweight in children	Germany, urban	The present study aimed at analyzing the efficacy of a 6-	8-13 y (N=22)	6 months	Randomized controlled trial	Intervention group followed football training program;	Self-esteem	KINDL-R questionnaire	In both intervention as control group a significant

(2010)			month football training program compared with a standard exercise program on health and fitness parameters in overweight children.				control group followed an established standard sports program. Both interventions took place three times per week			improvement in self-esteem
Robinson, Matheson, Kraemer, Wilson, Obarzanek, Thompson, Alhassan, Spencer, Haydel, Fujimoto, Varaday & Killen (2010)	A Randomized Controlled Trial of Culturally Tailored Dance and Reducing Screen Time to Prevent Weight Gain in Low-Income African American Girls (Stanford GEMS)	Oakland (United States), urban	A 2-year community- and family-based obesity prevention program for low-income African American girls	8-10 y (N=261)	12 months	Randomized controlled trial with follow-up measures scheduled at 6, 12, 18, and 24 months	Hip Hop dance class	Self-esteem	Rosenberg Self-Esteem scale (1965 & 1979)	Increase in self-esteem (in both control & intervention) but not statistically significant
Staiano, Abraham & Calvert (2013)	Adolescent exergame play for weight loss and psychosocial improvement: a controlled physical activity intervention	Georgetown (US), urban	This study examined whether a 20-week exergame (i.e., videogame that requires gross motor activity) intervention can produce weight loss and improve psychosocial outcomes for 54 overweight and obese African-American adolescents	15-19 y (N=54)	20 weeks	Randomized three-armed trial, with 2 intervention arms and one control	Exergaming (Nintendo Wii Active game)	Self-esteem	Rosenberg Self-Esteem Scale (1979)	No significant increase in both intervention groups.
Weintraub, Tirumalai, Haydel,	Team sports for overweight children: the	Northern California (US) urban	This study evaluates the feasibility,	8-12 y (N=21)	6 months	Randomized controlled trial	Intervention: soccer program; control:	Self-esteem	Rosenberg Self-Esteem Scale (1965)	Increase in self-esteem in both control as

Fujimoto, Fulton & Robinson (2008)	Stanford sports to prevent Obesity Randomized Trial (SPORT)		acceptability, and efficacy of an after-school team sports program for reducing weight gain in low-income overweight children				traditional health education			intervention group
Annesi (2005)	Relations of physical self-concept and self-efficacy with frequency of voluntary physical activity in preadolescents: Implications for after-school programming	Southern eastern United States, urban	This study aimed to test relations in physical self-concept and self-efficacy with voluntary physical activity in preadolescents enrolled in an after-school physical activity program	9-12 y (N=124)	12 weeks	Non-randomized controlled trial	Cardiovascular activities	Physical self-concept	The physical self-concept subscale of the Tennessee Self-concept Scale: 2 child Form	No statistically significant difference in physical self-concept between control and intervention. Within group changes over 12 weeks showed significant increase in the intervention group.
Sacher, Kolotourou, Chadwick, Cole, Lawson, Lucas & Singhal (2010)	Randomized controlled trial of the MEND program: a family-based community intervention for childhood obesity	UK, urban	The aim of this study was to evaluate the effectiveness of the Mind, Exercise, Nutrition, Do it (MEND) Program, a multicomponent community-based childhood obesity intervention	8-12 y (N=116)	6 months (9 week MEND program + 12 week swim pass)	Randomized controlled trial	Physical activity session and nutritional education	Self-esteem	Harter Self-Perception Profile	Statistically significant difference in self-esteem between control and intervention.
Sahota, Rudolf, Dixey, Hill, Barth & Cade (2001)	Randomised controlled trial of primary school based intervention to reduce risk factors in	Leeds (United Kingdom), urban	This study assesses if a school based intervention was effective in reducing risk factors for	7-11 y (N=634)	12 months	Group randomized trial	Teacher training, modifications of school meals, and the development and	Self-esteem	Hartars Self-Perception Profile	Intervention group had a small significant increase in global self-worth compared to the control

obesity	obesity	implementation of school action plans designed to promote healthy eating and PA	group
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Table 2: studies found on social participation (n=7)

Researchers	Title intervention	Location	Description	Age group	Duration and evaluation follow-ups	Study design	Healthy lifestyle intervention components	Youth empowerment related outcomes	Questionnaire (of interest)	results
Watson, Dugdill, Pickering, Owen, Hargreaves, Staniford, Murphy, Knowes & Cable (2015)	Service evaluation of the GOALS family-based childhood obesity treatment intervention during the first 3 years of implementation	North-West England, urban	Study evaluates the impact of the GOALS family based childhood obesity treatment intervention during the first 3 years of implementation	Mean age: 10.5 y (N=70)	6 months (one year follow up)	Pretest post-test	Sessions covering PA, diet and behavior change	Self-perception	Self-Perception Profile for Children	Significant change in social acceptance
R. L. Woodgate & C. M. Sigurdson	Building school-based cardiovascular health promotion capacity in youth: a mixed methods study	Canada (urban)	Participatory research and health promotion advocacy with training in one community (classroom)	12-13 y (N=26)	22 month	Mixed methods case study design	Workshops preparing healthy dinners & participating in a fitness class	Connection	Positive Youth Development Questionnaire & focus groups	For all the 5C scores: no significant difference
Beaulac, Olavarria & Kristjansson (2011)	'Bigger than hip-hop?' Impact of a community-based physical activity program on youth living in a disadvantaged neighborhood in Canada	Canada (disadvantaged urban community)	Physical activity intervention for positive youth development	11-16 y (winter N=67, summer N=28)	3 months	intervention	Participating in 12/13 weekly hip-hop dance classes	Psychological well-being & relationships	Qualitative interviews	Positive impact on psychological well-being
Bohnert &	Making a Difference: Evaluating the	United States	After-school program for	8-12 y (N=76)	30 weeks	Randomized	Traditional and non- traditional	socioemotional	Social Skills Rating System	socioemotional development: no significant effects

Ward (2013)	Girls in the Game (GIG) After-School Program	(urban)	low-income status girls to promote social-emotional development and reducing BMI and obesogenic behavior			controlled trial	sport and fitness activities, nutrition education	development	scale	
Jacobson & Melnyk (2012)	A primary care Healthy Choices intervention for overweight and obese school-age children and their parents	United States (urban)	Intervention for obese school-age children	9-12 y (N=15)	7 weeks	Pre-experimental, one group, pre- / posttest design	Activities related to PA	social skills	Social Skills Rating System	social skills: non stat. sign. Change
Fraser, Lewis & Manby (2012)	Steps in the right direction, against the odds: An evaluation of a community-based programme aiming to reduce inactivity and improve health and morale in overweight and obese school-age children	United Kingdom (urban)	Community-based intervention for overweight and obese children focusing on PA and nutritional education	5-16 y (N=325)	48 weeks	Cohort study	Team-based physical activities and group educational sessions for child and parent on healthy eating	Making friends & being more active	Qualitative analysis	Intervention showed positive influence on being social and activity level
Staiano, Abraham & Calvert (2013)	Adolescent exergame play for weight loss and psychosocial improvement: a controlled physical activity intervention	Georgetown (US), urban	This study examined whether a 20-week exergame (i.e., videogame that requires gross motor activity) intervention can produce weight loss and improve	15-19 y (N=54)	20 weeks	Randomized three- armed trial, with 2 intervention arms and one control	Exergaming (Nintendo Wii Active game)	Peer support	Exercise Confidence Survey	In both intervention groups peer support increased statistically significant compared to the control group

psychosocial
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adolescents
