

Implementation and Evaluation of an Online-Based Training for the Promotion of Physical Activity in the Nursery and Kindergarten Setting

Implementierung und Evaluierung eines Online-Trainings zur Bewegungsförderung in Kinderkrippen und Kindergärten

Summary

- › **Background:** Success of teacher-centered interventions to promote physical activity depends on training and motivation of its program implementers. Only they can pass on content, materials, and enthusiasm. For the setting-based health promotion program "Join the Healthy Boat" an online-based training was developed. Continuous process evaluation was used to find out whether a physical activity promotion program can be delivered via online-based training.
- › **Methods:** The online training was developed theory-based and is conducted in a standardized manner. It conveys background knowledge and practical implementation of the program materials with the help of interactive elements such as discussion groups, exercises, quizzes. Subsequently, the participants were asked to provide anonymous feedback on their satisfaction, perceived self-efficacy and willingness to recommend the training or the program to others. The analysis is descriptive.
- › **Results:** 2329 teachers attended the online training of which 1638 (70.3%) participated in the process evaluation. 91.0% (N=1632) rated the training as very good or good. 86.8% (N=1612) strongly agreed that the training enabled them to implement the program. 93.5% (N=1604) said they were particularly or very motivated to implement health promotion more consciously and increasingly. 82.9% (N=1627) would recommend the training without hesitation, another 15.2% probably.
- › **Conclusion:** The online training was well received and positively evaluated. The teachers feel motivated by the training and enabled to implement the program. Thus, it seems possible to provide an online-based program for physical activity promotion.

KEY WORDS:

Health Promotion, Process Evaluation, Prevention, Training Development, Child Health

Introduction

In Germany, as in most other industrialized countries, the promotion of physical activity is important and necessary from an early age on. Not only have overweight and obesity already reached high levels among kindergarten children, which seems to have come to a high stagnation (7, 30), but for instance the decline in children's motor skills up to 2003 and the stagnation since also indicates a clear need for physical activity promotion (6, 21).

Even in children, an inactive, sedentary lifestyle can increase the risk of overweight and obesity and associated diseases, such as cardiovascular or metabolic diseases (10, 40). The risk of certain cancers, including pancreatic cancer, breast tumors and colon cancer (11) or mental illness (3) also increases in obese children.

Especially a low socioeconomic status is a predictor for overweight in childhood and adolescence in Germany (13). Institutions such as nurseries and kindergartens are therefore a good place for setting-based physical activity promotion, as the majority of children aged 0-6 years can be reached there, regardless of their social and cultural background.

That there are effective setting-based programs in nurseries and kindergartens for health or physical activity promotion has been shown by successful evaluation studies (9, 17, 38). Concrete success with regard to children's motor skills has also been demonstrated in numerous programs (1, 4, 18, 28). In turn, improving motor skills at kindergarten age has positive effects not only on physical health but also, for example, on learning and working memory performance (43).

The Importance of Program Implementers in Health Promotion Programs

In setting-based, teacher-centered physical activity promotion interventions, the success of the program depends on the quality of the training and on the program implementers' motivation (12). Only they can transfer knowledge, content, materials, and enthusiasm for the topic to the target group. Program implementers need training that is practical yet provides background knowledge (35). Furthermore, teachers must be provided with a sense of care and support and

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Table 1

Participant's rating of the online training in school grades from 1-6 (N=1632).

RATING	QUANTITY
Very good (1)	790 (48.4%)
Good (2)	700 (42.9%)
Satisfactory (3)	117 (7.2%)
Sufficient (4)	17 (1.0%)
Deficient (5)	6 (0.4%)
Insufficient (6)	2 (0.1%)

must perceive the program as enrichment and not as an additional burden (37). Nursery and kindergarten teachers in addition to parents, not only serve as teachers for children, but also as role models, which can be successfully used and supportive especially in the field of health promotion (22, 29, 36). However, for this to happen, it is important that teachers themselves are motivated to behave in a health-promoting manner in front of children. Therefore, the quality of the program implementers' training is a key element that can improve program fidelity as well as implementation and thus significantly increase the effectiveness of health promotion programs (2, 16, 20, 39). All of this, knowledge, motivation, and implementation skills, must figure prominently in training for program implementers and be taught in a teacher-friendly and practical manner.

To deliver such skills and the necessary knowledge, well-planned trainings and a trusting access to the implementers/teachers are key. The 'integrated action model' (25, 26), specifying cognitions and affects, offers a theoretical framework for the development of motivating training courses. The model integrates motivational, action and social psychology and defines the process in three phases: a motivational phase, a phase to choose ones action, and a volition phase, of which each is characterised by distinct cognitions and affects (26).

Teacher-centered programs for physical activity or health promotion also have many other advantages. Compared to programs implemented by external experts, they guarantee a more sustainable and longer-term implementation, because knowledge and implementation ideas are anchored directly at the teachers and can thus also lead to a change in their behavior (8). This is not only beneficial to the program implementers' health, but also makes the delivery of health-related content much more intrinsically motivated and authentic. Teacher-centered programs are also less expensive than external professionals and involve less organizational effort. Furthermore, in addition to purely imparting knowledge or temporary exercises and games, permanent changes in the kindergarten environment can be implemented (e.g., acquisition of climbing frames, offering regular physical activity classes, rental of playground equipment that stimulates physical activity).

Internationally, there are multi-component, kindergarten-based interventions focusing on the promotion of water consumption, healthy snacking, physical activity and the reduction of sedentary time in preschool children across different European countries (24), in which small effects were seen for physical activity, especially in privileged children and boys (9). On a national level in Germany, the program "Join the Healthy Boat" with similar aims was established, however, training and transportation of knowledge and skills differs significantly.

Promotion of Physical Activity in the Program "Join the Healthy Boat"

"Join the Healthy Boat" is a setting-based, teacher-centered health promotion program (19) implemented throughout Baden-Württemberg (a state in the southwest of Germany) for children aged 0-6 years. Since 2014 until mid-2023, more than 5000 teachers from more than 1600 facilities (nurseries, kindergartens) across Baden-Württemberg have participated in the evaluated program. The goal of the program is to awaken joy in (everyday) physical activity and to integrate or expand physical activity in the daily facility routine. Through the active involvement of parents, support from the parental home and thus a change in the entire child's environment is sought to offer children in both living environments - nursery or kindergarten and parental home - an environment that stimulates and supports health and physical activity promoting behavior. Participation in the program or training courses as well as the program materials are completely free of charge for the teachers.

For nurseries (children aged 0-3 years), the program materials include games for different age levels, games with everyday materials, movement stories, physical activity breaks for teachers to deliver, children's cards with small exercises for the children's own use, and setups for an environment that stimulates everyday physical activity.

For kindergartens (children aged 3-6 years), the materials contain 20 elaborated lessons for a sports room, 15 physical activity lessons, in which not only practical but also theoretical knowledge are deepened, children's cards with small exercises for the children's own use, and 56 activity cards for daily direct use in the kindergarten's everyday life.

For the involvement of parents, there are ten letters for parents in five different languages and materials for two parents' evenings each in the program materials and in the download area of the program's website. In addition, "Join the Healthy Boat" offers three online parents' evenings each year on different areas of the topic of physical activity (active leisure activities, motor skill development, movement and relaxation), in which all parents can participate free of charge.

From 2014 to 2020, teachers participating in the program were trained using a train-the-trainer approach. Due to the pandemic, among other things, this training concept had to be adapted and changed. A new, online-based training was developed, which has been implemented and continuously evaluated since the beginning of 2021. Continuous process evaluation was used to find out whether a physical activity promotion program can be delivered via online-based training.

Methods

Development and Content of the Online-Based Training

The online-based training of "Join the Healthy Boat" is aimed at nursery and kindergarten teachers, it was developed based on the theory of the Integrated Action Model (25). Here, a motivation, intention, and volition phase lead to new action. The training's content focuses on health-related background knowledge for children and adults, use of program materials, implementation of the program into everyday work as well as possibilities for parental involvement. To ensure that the training's content is conveyed in a way that is appropriate for all participants, the training includes a combination of theoretical background knowledge on health topics (for childhood and adult age) and practical adoption and implementation of the program materials using interactive elements in order to activate and engage participants. Thus, background knowledge is presented, but

also discussion phases in small groups and break out rooms, physical activity breaks, and quizzes are carried out. Additional monthly online meetings are offered to support participants even after the completed training. There, participants can ask questions and exchange ideas with each other and receive regular new input via a short presentation on current health topics. The online training is conducted in a standardized manner by two scientists from the “Join the Healthy Boat” program via a ministry-approved online platform.

Evaluation of the Online-Based Training

During the period of 29 months, at the end of the online training, participants receive an evaluation link with the request to provide feedback on quality and timeframe of the training course, motivation to implement the program and health promotion in general, as well as useful knowledge and satisfaction with the course. Participants also receive an email on the following day, reminding them to take part in the short questionnaire, if they have not already done so. In the online questionnaire, which was developed in cooperation with a pedagogical advisory board in German and pre-tested in a total of five training courses, participants are asked to provide anonymous feedback on their satisfaction, perceived self-efficacy and willingness to recommend the training or the program to others. The 13-item questionnaire includes open questions and questions with different response scales, such as very good to unsatisfactory (1-6), or “(totally) agree” to “totally disagree” (1-5), as well as “too long”, “just right”, and “too short” (1-3). All participants, who took part during the study period, got invited to complete the questionnaire, participation was voluntary. The analysis here is purely descriptive.

Results

Participant Numbers

Since the launch of the online training of “Join the Healthy Boat” in January 2021 up to June 2023, 2329 nursery and kindergarten teachers have participated in the training. Of these, 1638 (70.3%) gave their feedback via the online questionnaire.

Results of the Process Evaluation

91.0% of the participants (N=1632) rated the training as very good or good, resulting in an overall grade of 1.6 (school grades from 1-6; 1 = very good, 6 = unsatisfactory) (see table 1).

86.8% of participating teachers (N=1612) responded “(totally) agree” to the question of whether they felt able to implement the program in their daily work as a result of the training (“I feel able to implement the program in my daily work as a result of the online training”) (see figure 1).

With regard to motivation for a sustainable implementation of the learned contents, figure 2 shows that 93.5% of the participants (N=1604) stated that they were (very) motivated to implement health promotion and physical activity promotion more consciously and more intensively in their day-to-day work. 83.74% of teachers (N=1587) indicated they would like to implement “Join the Healthy Boat” in their nursery or kindergarten group very soon.

82.9% of the participants (N=1627) stated that they would recommend the training to others without reservation, and a further 15.2% would probably recommend it to others (see figure 3). 91.5% of the participants rated the duration of the online training as “just right”, whereas 5.0% stated that the training was “too short” and 4.1% felt the training duration was “too long”.

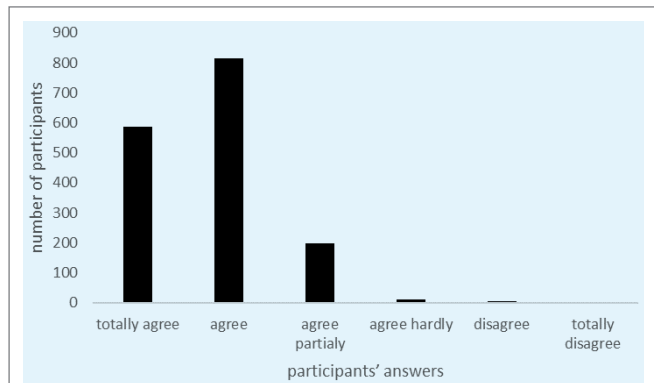


Figure 1

Participants' (N=1612) answers to the statement “I feel able to implement the program in my daily work as a result of the online training”.

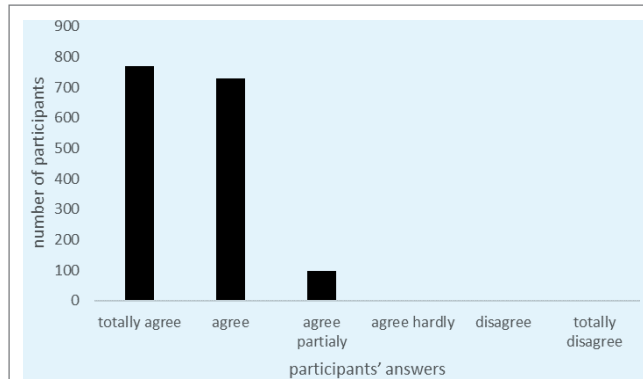


Figure 2

Participants' (N=1604) answers to the statement “I will try to implement more health promotion / physical activity promotion into our regular nursery / kindergarten routine”.

Discussion

The health promotion program “Join the Healthy Boat” seeks to provide children as young as at nursery and kindergarten-age access to a healthy lifestyle. Since it is a setting-based, teacher-centered program, it is essential that the program implementers (teachers) are well trained, know numerous implementation options, and are also motivated to integrate them into their daily work. In comparison to the years 2014 to 2020, this happens through a standardized, newly developed online training course since the beginning of 2021. Trigger to change was amongst others the pandemic, which made in-person meetings impossible, but also, the previous train-the-trainer system, which was in place state-wide for seven years, started to show issues, which made a change necessary. Main issues included non-standardised knowledge transfer, lack of willingness by the regional trainers to receive further training and to present online as well as too little participants for the methods included in the previous training concept. Therefore, the research team behind “Join the Healthy Boat” developed a new, theory-based training program for teachers that can be delivered online, enabling standardization, quality control, and space-independent presentation.

Since “Join the Healthy Boat” is solely teacher-centered, it is vital that teachers are confident and motivated to implement the program in their nurseries and kindergartens, as this can affect the program's results (29, 16). Aim of the new, online-based training program was to enable teachers to implement health and physical activity promotion into their daily work with >

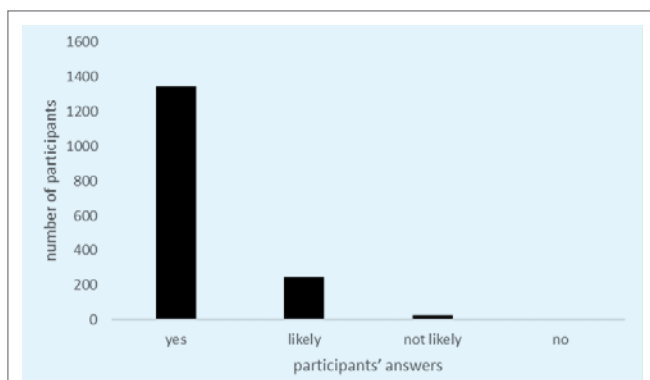


Figure 3

Participants' (N=1627) answers to the question "Will you recommend the online training to others?"

children aged zero to six years. In order to do so, they have to receive background knowledge about health, physical activity, and some psychological and educational aspects, e.g., how children learn, how surrounding can help children to be more physically active, why sufficient physical activity is so important even at a young age, and what teachers and nurseries and kindergartens can do to encourage and support a healthy lifestyle from early on. The program implementers (teachers) have to have ideas of how to deliver the newly learnt aspects and program materials, and they have to feel confident, motivated, and at ease to include the program into their daily work routine with the children, so it feels "normal" to the children to behave in a health promoting manner.

There are similar programs aiming at physical activity promotion in kindergartens, extremely rarely in nurseries. However, delivery methods vary substantially, with either face-to-face train-the-trainer approach (2, 27) or external experts that visit the children in kindergarten for a certain period of time (41). Online training courses are still very rare in a preventive setting, yet health-related online training for teachers exists at therapy and instruction level when dealing with certain diseases or emergencies, e.g. provide asthma first aid (23). Nevertheless, there are first attempts to involve teachers and also parents using apps or online platforms, which can transport knowledge on a different level and more prominent, but also can remind and nudge to increase implementation (33).

Knowing all this, the new, online-based training program is continuously being evaluated, which resulted in teachers' feedback, that it is very well received and has been evaluated positively across the board. (This) Online-based training seems to meet the needs of the teachers. Comparing the number of participants in the program since the beginning in 2014, a significant increase can be seen. In the years prior to the conversion to online training (2014 – 2020), the program for nurseries and kindergartens had 2711 participants over seven years. In the 2.5 years since the change to the new online training was made (2021 – June 2023), 2329 teachers participated in the program, which is a 140.5% increase in the average annual number of participants. It cannot be determined with certainty whether this increase is due solely to the change to online training, or to an increase in awareness of health and physical activity promotion in society, or to a change in advertising strategy (digitalized instead of purely postal) and a new website. Nevertheless, the increase is clear and thus seems to meet the needs of teachers. Participating teachers lose less work or private time traveling to and from the training courses and can easily participate from home or work without incurring travel costs or organizational expenses.

In addition, the online-based training was overall rated very positively. Of course, selection effects can be assumed here, that participants who were satisfied are also willing to complete an online questionnaire. Nevertheless, the response rate of 70.3% can be considered very high, so that possible selection effects cannot be used as the sole explanation for the positive feedback. Even though each online survey is different (e.g., in terms of content, length, dissemination channel, incentive to complete, etc.), a meta-analysis concluded that the average response rate of online surveys is 44.1% (42). So that a response rate of 70.3% can be considered a success. The online questionnaire of the online training is relatively short, can be completed in an uncomplicated manner, is anonymous, and repeatedly offers the opportunity for honest opinion feedback, which was apparently perceived as user-friendly and motivated to complete and submit it.

Offering online-based training also seems to work in the area of physical activity promotion, which otherwise takes place with direct exercises and games on site. Through recurring elements and exercises, the teachers are encouraged to actively participate and thus learn movement sequences and game and exercise ideas.

Teachers who have internalized an active or health-promoting lifestyle are certainly better reached by this type of training and topic in general than others and can certainly convey the content more authentically and better. Studies support this relationship (22, 15). A one-time training will not change the entire physical activity behavior or health attitude of participating teachers, but it can still be a start or an important step. Therefore, deliberately not only child-related content is presented, but also background knowledge and action alternatives for adulthood. In addition, the training repeatedly addresses the importance of the teachers' function as a role model in health promotion. This is of great importance, as it can be shown that negative attitudes regarding one's own health behavior among teachers can be a hindrance in promoting the health of their own students (34). Even so, it is of great importance to develop and improve the health literacy of teachers (31). This is the only way to increase the likelihood that they themselves will adopt practices to promote children's physical activity or health (32). Since 93.5% of the participants in the online questionnaire stated that they were particularly or very motivated to implement health promotion and physical activity promotion in their daily work more consciously and more intensively after the online training, the content of the training seems to have achieved its goal.

Further, 86.8% stated in the questionnaire that they "(totally) agree" to feeling able to implement the program in their everyday work due to the training. The fact that the training was "only" online does not seem to be a disadvantage for the self-efficacy expectations. Other studies have also shown that online training for program implementers can work very well in the field of physical activity promotion (14) and should therefore be used more widely to reach more participants that can improve children's chances to a more active and healthier upbringing.

Main Limitations and Strengths

Limitations

As any study, this one is not without limitations, which should be considered when interpreting those results. For example, it cannot be ruled out that only satisfied participants gave feedback and therefore, a selection bias has to be considered, even with the high response rate of 70.3%. Further, in order to change

children's physical activity behavior, it is necessary to educate and motivate nursery and kindergarten teachers, which on the other hand does not allow for precise assumptions about the actual effects on the children's behaviors. Moreover, a three-hour training course and the materials provided may not automatically change the physical activity behavior in kindergartens and nurseries or the health attitude of all participating teachers in the long term. Therefore, further studies on implementation, implementation fidelity, effectiveness at child level and sustainability are necessary.

Strengths

As the online training program can be offered free of charge and at minimal effort, many teachers can be reached, which increases the implementation reach and increases the cost effectiveness of the program. The here described online-based training was evaluated very well, and the teachers are motivated and feel able to implement physical activity promotion in their day-to-day work with children.

Conclusion and Outlook

The online-based training of "Join the Healthy Boat" is widely accepted and received very positive feedback. Even though the online-based training was initially developed due to external constraints caused by the pandemic and the sinking motivation of previous trainers, it is still a very good way of conveying content that promotes health promotion and physical activity. The participating teachers feel motivated by the training and are able to implement the program to promote physical activity in their facilities. Online training meets the needs of teachers, since travel and thus needed time and organization are less, and they are easier to integrate into their daily lives. In addition, larger groups of participants can be reached simultaneously, regardless of location, and the content can be transmitted in a standardized way that enables quality control.

The program "Join the Healthy Boat" will stick to the online-based training and will continue to offer it in future to all teachers in south-west Germany for free. In order to get an insight into the long-term implementation of the contents for the promotion of physical activity in the kindergarten setting, research on implementation and sustainability is planned, as well as a large outcome evaluation in those settings. ■

Conflict of Interest

The authors have no conflict of interest.

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Summary Box

The health promotion program „Join the Healthy Boat“ offers setting-based physical activity promotion for nurseries and kindergartens. The teachers implementing the program have been trained through an online-based training course.

The process evaluation can show that such training is very well received and provides the teachers with confidence and motivation to implement the program. It therefore seems possible to provide a program for physical activity promotion online.

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