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Introduction

According to the Global Advocacy Council for Physical Activity (2010), the U.S. Department of Health and Human Services (USDHHS) (2008) and the World Health Organization (WHO) (2008), regular physical activity is essential to the healthy development of children and contributes to the reduction of chronic diseases. Children with high activity levels have a lower risk of cardiovascular risk factors such as hypertension, obesity, smoking and type 2 diabetes. Physical activity promotes cognitive ability, mental health, psychosocial competence and personal development (WHO 2008; Salmon et al. 2007; Biddle and Cavill 2008; Sallis and Owen 1999). A study of German adolescents showed a significant association between sport endurance and psychological well-being, low alcohol and low tobacco consumption (Kirkcaldy et al. 2002). Pate and co-workers (1995) proposed that a parabolic function is the best estimate to describe the relationship between physical activity and most health outcomes in adults. Assuming this also applies to children, an increase in physical activity should induce a rapid improvement of health, especially in children with low physical activity at baseline. Kelder et al. (1994) demonstrated that low levels of physical activity or inactivity established during childhood and adolescence will most likely be maintained throughout the life span. Conversely, Twisk (2001) concluded that there was little evidence suggesting that physical activity during childhood and adolescence had an effect on health during adulthood.

Guidelines for programs to promote physical activity have now been established based on the available evidence and practicability considerations. At least 60 minutes of moderate to intense daily physical activity is required to ensure healthy development and health-promoting effects. Activities involving physical inactivity should be limited to two hours per day (USDHHS 2008; Strong et al. 2005; Kavey et al. 2003). According to the Childhood and Adolescent Health Survey in Germany (KiGGS), only 15.2% of boys and 9.9% of girls aged 7 to 10 years met the target of at least 60 minutes of physical activity per day. In the group of 11- to 17-year-olds, only 28.2% of the boys and 17.3% of the girls met the target (Lampert et al. 2007). As expected, the survey showed that the motor skills of older children and adolescents were better than those of younger children. However, this typical course exhibited differences in terms of the steepness of the increase in performance for different motor skills. For example, no age-related increases in performance in flexibility (forward bending) and bicycle endurance tests were observed in girls (Starker et al. 2007).

Excessive television watching is inversely associated with physical activity. Not surprisingly, children and adolescents with high media consumption are more often affected by obesity (Lampert et al. 2007; Marshall et al. 2004). Excessive television viewing and computer game playing increases the risk of health impairments such as impaired vision, postural disorders and headaches. The consequences of limited social communication add to the problem.

For children, school is a central part of life and, as such, it is an ideal place to initiate measures to promote physical activity and sports participation. Comprehensive physical activity-oriented school programs are said to have the potential to slow down the age-related decrease in physical activity and to establish lifelong patterns of healthy physical activity behavior. School programs reach virtually all members of an age group independent of parental socioeconomic status, including the children of parents with a low socioeconomic status, who are less likely to participate in extracurricular sports activities (German Sports Federation 2006). According to Siegrist et al. (1998), school has a homogenizing effect on social gradients, thus initially offsetting or masking the effects of the family home environment. Apart from schools being an important center of activity, including daily physical

education instruction in the school curriculum is an important element of physical activity promotion. These programs should help students discover the joy of movement; they should be adapted to the individual student's development level and should promote the development of fundamental and specific motor skills (Strong et al. 2005). From an educational, medical and exercise science perspective, one to two hours of school physical education per week is not enough to ensure adequate physical activity for children and adolescents (Lower Saxony Ministry of Education and Cultural Affairs 2005; Centers for Disease Control and Prevention 1997; Kolbe 1993).

The goal of physical education in primary schools is to promote intentional physical activity and to promote interest in play and sports activities from a holistic approach (Jüngst 2002). As a school subject, physical education has the interdisciplinary task of promoting the personality development and the acquisition of social value orientations among children and adolescents. Exposure to a variety of different situations that must be mastered individually or in groups provide action- and adventure-oriented experiences that have a positive effect on the development of social competence and other skills. It also provides specific learning opportunities deriving, in particular, from emotionally intense forms of encounter and extensive possibilities to experience through the senses.

The didactic objectives of physical education instruction are (Jüngst 2002; Hollmann and Hettinger 2000; Balz 1995):

- to improve motor skills;
- to help students discover the joy of movement and to encourage children's natural urge to engage in physical activity and play;
- to prevent diseases of civilization, especially postural disorders;
- to build competence in lifetime physical activities, i.e., those that can be continued throughout life and serve to preserve or promote health;
- to convey basic principles and knowledge of sports theory, e.g., about which physical or motor activities achieve which specific physiological changes in the body and the effects of these physical responses on the health.

Health education should focus on sports discipline-specific subjects, interdisciplinary sports subjects, and sports-related health subjects such as endurance training, effects of improper training, relaxation exercises for enhanced body awareness, physiological processes of perspiration and respiration, body hygiene, fluid intake, proper sports attire, etc. Children should learn to properly and safely engage in sports and feel at ease when doing so (Balz 1995).

Daily physical education must include effective prevention measures, the quality of which can be assessed based on four quality dimensions: concept, structure, process and outcome quality (Kliche et al. 2004; Dierks et al. 2001; Donabedian 1986, 1966). Appropriate instruments and concepts are now available, but problems in their practical implementation still exist (Kolip and Müller 2009; Bonnen 2009; Advisory Council on the Assessment of Developments in the Health Care System 2006).

The SPRINT study conducted by the German Sports Federation (2006) empirically assessed physical education in Germany in terms of its objective/structural framework conditions as well as the subjective perspectives of the primary stakeholders. Special problems in elementary schools are the fact that educators teach subjects they are not specialized in and shortcomings in quality assurance. Analyses of physical education programs showed

typical gender-specific patterns. At German schools, there is a considerable discrepancy between the sports disciplines and activities offered by the schools and those desired by the students. To ensure the professional competency of the teachers, teacher training and continuing education should be adapted to the changing physical activity spheres of the students in order to ensure that physical education instruction meets the needs of the students of today.

A UK intervention program entitled "Active Programme Promoting Lifestyle Education in Schools" (APPLES) was designed to promote healthy eating and physical activity. The APPLES concept focuses on teacher training, modification of school meals, and the development and implementation of school action plans. In Germany, an intervention entitled "*Klasse in Sport*" helps ensure that children live and learn in a "movement-friendly" school environment with frequent (daily if possible) supplementary physical activity periods. This is achieved by integrating sports activities in recess periods and physical activity in general classes. In "*Klasse in Sport*", trained professionals provide one hour (60 minutes) of physical education instruction per day at the cooperating primary schools. Furthermore, deficits in game and sports materials needed for the supplementary physical education activities are eliminated and qualified training and continuing education courses are offered for the teachers. Fifty schools in Germany are already participating in this intervention.

The following article shows a detailed representation of the intervention of a school-based program to promote physical activity in the childhood. The intervention "fit for pisa" has been developed in response to the demand for scientific evaluation of interventions such as daily physical education. Its goal is to provide quality management-secured, structured and standardized PE instruction by qualified instructors.

Framework curriculum and basic guidelines for physical education instruction in primary schools in Lower Saxony

In Germany, it is the responsibility of the individual states to develop their own educational curricula (www.bildungsserver.de). The state guidelines differ significantly, particularly in terms of the definition and interpretation of terms, statements regarding the educational value of physical education, and interdisciplinary teaching objectives (German Sports Federation 2006). However, almost all of the state curricula specify health as the main justification for school physical education.

The State of Lower Saxony's physical education curriculum will be described as a case example. In Lower Saxony, elementary schools must provide a mandatory two hours of physical education per week. One additional hour of physical activity per week must be ensured through daily movement activity units, which are to be integrated in non-PE classes. Special needs students with psychomotor development problems receive additional special physical education instruction, which is to be delivered as individualized instruction for a total of two class hours per week (Lower Saxony Ministry of Education and Cultural Affairs 2004). Special physical education must be instructed by specially trained professionals. Regular physical education, on the other hand, is often taught by teachers without special training, e.g., homeroom teachers (German Sports Federation 2006).

The "Principles and Guidelines for School Physical Education and Movement Education" is the substantive basis of the physical education and movement activities curriculum for all schools in Lower Saxony. These guidelines specify that school physical education must be adapted to the development level of the children and that it must promote the following competencies (Lower Saxony Ministry of Education and Cultural Affairs 2005):

- Sports competence:

  Primarily includes play, movement, physical and sports-related abilities and skills (e.g., improvement of performance, learning to follow and create rules/game rules, music and rhythm education, pupils' organization of their own game and training situations, body awareness, and ecological aspects of movement execution).
- Self-competence:

  Mainly involves assuming responsibility and the independent and self-confident input of one's own experiences in differentiated movement activity settings (e.g., developing and implementing one's own concepts of activities, making self-assessments of performance, experiencing and learning to deal with success and failure, overcoming fear, developing strategies for coping with difficult activity situations, communicating feedback, recognizing interests and motives for sports participation, being aware of body image, experiencing well being through physical activity, understanding the benefits of a healthy lifestyle, and learning fairness).
- Social competence:

  Primarily involves the ability to engage in group games/play and to interact with others sensitively and responsibly. The children and adolescents should learn to help each other, be considerate of others, and develop team spirit (e.g., to sensitively adapt their actions to the actions of others, to help others and learn to accept help from others, conflict management, making compromises, conflicts with social and cultural differences, and to learn foreign physical activity cultures).

Physical education instruction in primary schools is co-educational. This gives children and adolescents opportunities to acquire social skills that promote cross-gender interaction, to empathize with the perspectives of the other sex, and to understand their own gender roles. For movement education to result in targeted intentional activity, the content and objectives of the curriculum must be clearly defined and documented. In addition to teaching athletic skills and abilities, the curriculum must allow room for reflection on the experiences gained and lessons learned (integration of theory and practice) so that they can be shared in theoretical debates and discussions (Lower Saxony Ministry of Education and Cultural Affairs 2005).

"fit for pisa" intervention project

"fit for pisa" is an intervention project launched in Göttingen, Germany in 2002 to promote daily physical education in schools. Participating students receive three 45-minute hours of PE/week in supplement to the mandatory two 45-minute hours required by the state of Lower Saxony. The daily physical education program was initiated by a local sports club, ASC Göttingen von 1846 e.V. (hereinafter referred to as "*ASC Göttingen*"), the State Chamber of Physicians, and the Göttingen Department of Public Health in collaboration with the Georg August University of Göttingen in 2002 and has been continued without interruption since the 2003/2004 school year. Daily physical education in units of 45 minutes per day was implemented as an integral part of the compulsory curriculum for primary school students in the selected grade levels from the beginning to the end of the school year. The school teachers provide the mandatory two hours of physical education required by the state of Lower Saxony. External trainers from ASC Göttingen provide the supplementary three hours of PE/week provided by the intervention (Figure 1). In consideration of the maximum permissible number of class hours for primary school students, the supplementary PE classes replace two reinforcement classes and one regular

teaching hour. The regular teaching hour is selected by the school teachers and can vary weekly (depending on necessity the regular teaching hour can be art, mathematics etc.). During a one-year preliminary phase starting in October 2002, framework conditions for the overall project were established and the personnel and spatial structure of the primary schools was assessed. A multi-disciplinary, multi-agency approach was used to ensure the development of a high-quality, effective intervention program (Henze 2007).

By the beginning of the 2003/2004 school year, three primary schools contributing two first grade classes each had been recruited to the intervention in Göttingen. The schools entered the project on a voluntary basis in order to ensure the long-term participation of the schools and the support of all persons involved. Eventually, more schools became interested in the project and in the following school year, another two primary schools contributing a total of nine classes participated in the intervention. The daily physical education program is now being conducted in grades 1 to 4 at five primary schools in Göttingen. Until now, the costs for the external trainers (roughly € 2500 per class per school year) have been covered by grants from the Lower Saxony State Chamber of Physicians, the Göttingen School Foundation, the Toto Lotto Foundation, the Sports Physicians Association, and the Association for Health Promotion. In the summer of 2005, a parents' initiative was formed at one of the first intervention schools with the goal of raising enough money from parents to offer additional physical education to classes not participating in the "fit for pisa" project.

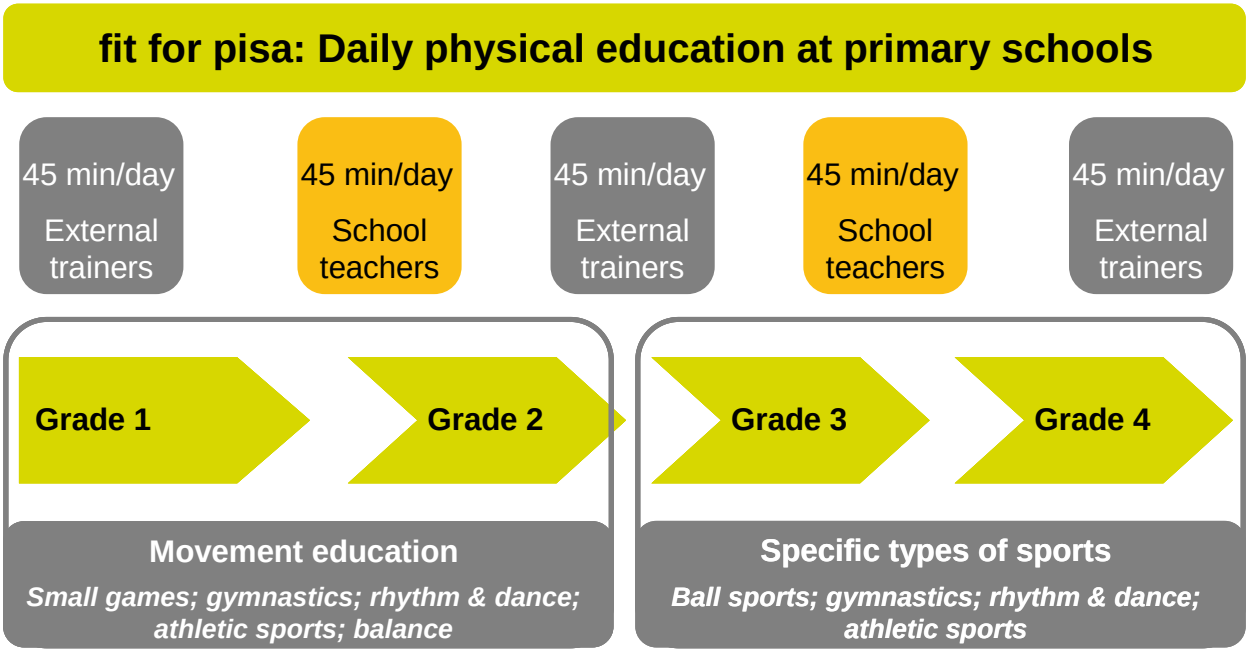

Figure 1: fit for pisa intervention

Please insert Figure 1 here

Framework and implementation of the daily physical education intervention

Requirements for daily physical education implementation in the framework of the project were defined. All five class hours of physical education are to be taught as single class hours distributed evenly throughout the school week. Physical education classes are to be held outside as often as possible, provided the weather conditions and

lesson contents allow. Compliance with the necessary safety rules and other rules and standards forms the basis of effective an accident-free physical education instruction. It is mandatory to wear appropriate sports attire and to remove watches and jewelry for physical education classes as this helps prevent accidents and contributes to the general safety of the pupils. The schools must have a gymnasium or sports hall of adequate size and adequate sports equipment and materials (balls, ropes, hoops, boxes, benches, parallel bars, etc.) to ensure adequate structural quality of the daily physical education program. Because the school's gymnasiums or sports halls generally are not available for physical education every day, the external trainers must fall back on other rooms and facilities, such as outdoor spaces, schoolyards, nearby parks, the school auditorium, classrooms, and break rooms as needed. These circumstances require originality and creativity on the part of the external trainers. Topics such as sports in small spaces, outdoor/schoolyard sports, relaxation, gymnastics, and short dances are covered in the PE classes and adapted to the available space. Due to the good teamwork between the schools and the project management team, it was possible to teach all intervention classes individually, in spite of the high manpower requirement.

The daily physical education curriculum content and teaching methods were developed and continuously optimized by members of the University of Göttingen's Institute of Sport Sciences and ASC Göttingen based on the state school guidelines and the current state of scientific knowledge. The planning and implementation of the daily physical education program was adapted to the specific conditions of the setting and to the needs of primary school students. Thus, daily physical education was provided using a needs-oriented, co-educational approach. The supplementary hours of physical education provide a variety of additional opportunities for in-depth learning and experiences. Optimal development of motor skills by the individual pupil is a key focus. The training of motor skills, the acquisition of basic motor skills for sports, the development of values, and the corresponding knowledge acquisition are integral components that are closely linked to the promotion of social competence. A multi-perspective teaching approach will be used to achieve this linkage. The goal is that the children should learn to express themselves through physical activity and learn to increase their individual performance through practice and experimentation. The development of a sense of community and learning to deal fairly with others are key learning objectives. Furthermore, the children should learn ways to enhance and preserve their health and fitness and obtain an appreciation for the benefits of a healthy lifestyle. The children will be given opportunities to implement their own ideas, achieve goals independently, and explore individual learning strategies. The intervention program will focus on activities for age-appropriate enhancement of basic motor skills, e.g., activities that allow the children to improve their coordination, balance and spatial orientation, to develop imagination and creativity, to learn safety issues related to physical education and to assess and manage risks, and to recognize their own physical limits. The learning objectives of the "fit for pisa" intervention, which are based on these general intentions, were broken down into five main categories or "learning areas" (Table 1). The specified learning objectives and content of the interventional curriculum are binding for all teachers and external trainers participating in the project. The PE instructors should guide the learning activities in such a way that the children gain an active interest in the content of the lesson (Henze 2007).

Please insert Table 1 here

Table 1: Learning objectives of the "fit for pisa" intervention (adapted from Henze 2007)

Skills and abilities	Learning objectives of the "fit for pisa" intervention

Specific sports-related skills	• Acquire skills in different movement patterns • Improve motor skills • Acquire skills in sports-specific techniques • Improve agility • Learn team games • Improve skills using large and small sports equipment • Movement, dancing to music • Gain experience moving in and out of the water
Physical motor skills	• Learn body awareness and control • Develop physical experiences • Learn to make self-assessments of oneself and one's abilities • Improved coordination and fitness
Social skills:	• Enjoyment of sports activities • Acquire social competence • Develop cooperation skills • Learn to deal with winning and losing
Affective skills	• Discovering the fun and enjoyment of sports • Dealing with happiness, anger, irritation and sadness • Increase motivation to learn and achieve
Cognitive skills	• Learn and execute a variety of movement and game forms • Learn to solve problems alone and in a group • Learn safety issues related to physical education and to assess and manage risks • Learn to make self-assessments of one's own skills and abilities • Learn and abide by rules

In the "fit for pisa" intervention, physical education instruction for first and second graders focuses on a multifaceted play and movement education concept in which the children are exposed to a wide and unspecialized range of different learning areas. The five key learning areas for grades 1 and 2 are: (1) play; (2) gymnastics and movement skills; (3) gymnastics, rhythm and dance; (4) running, jumping, throwing and hiking and (5) balance. The key focus of the physical education curriculum for these grade levels is play and movement education (Table 2). Internal differentiation (i.e. respecting differences in individual learning abilities, performance capacities, learning approaches, and paces of learning) is a central objective. The goal is to address the strengths and weaknesses of each individual child. The children should be challenged and encouraged, not over-challenged and discouraged. They will be met at their individual performance level. The learning steps required for the individual pupil should be based on the child's specific learning process rather than on deficits. Each first and second grade class will be provided one external trainer and one permanent, qualified reference person (teacher) for physical education instruction. New movement experiences, opportunities for self-activity, encouragement to solve movement tasks, sports as an element of healthy lifestyles in everyday life, and imagination-stimulating activities using portable and adaptable equipment and materials are integral themes and contents of the daily physical education intervention. Age-appropriate elements of child play and exploration as well as friendly competition form the basis for the development of motor skills and abilities. Sports such as volleyball and track and field are frequently offered by primary schools, but are not very popular among the students. The pupils frequently prefer sports such as self-defense and badminton, which are rarely offered by schools. Many of the preferred sports (table tennis, badminton, judo, etc.) could be integrated into school physical education classes with no major difficulty. The daily school physical education intervention attempts to include sports preferred by the pupils in order to develop, promote and preserve a sense of fun and enjoyment of movement in the children.

In grades 3 and 4, sports skills will be deepened and new sports will be introduced in an age-appropriate manner. The children will be introduced to the area of movement, games and sports. This includes the promotion of fitness and training in special techniques in the following learning areas: ball sports/games, gymnastics and apparatus gymnastics, swimming and track and field. In addition, epochal projects such as inline skating, table tennis, climbing, rope skipping, kung fu and acrobatics will be offered from grade 3 on. All motor skill areas will be uniformly used and trained. The age-appropriate introduction to the areas of movement, games and sports will be emphasized in grades 3 and 4 (Table 2). The goal of offering this wide range of activities, which allows the children to discover new sports, is to make school physical education more attractive to all students, male and female. From grade 3 on, the goal is to deepen competency in different sport disciplines that promote specific conditions and expose both girls and boys to new movement activities that they are less familiar with (Klewin 1998; Zipprich 2003). In the higher primary school classes, gender-specific differentiation of physical education instruction will be implemented only if, in the course of a class, it becomes clear that differentiation is necessary. From the 3rd grade on, three specifically trained instructors will be provided for the following core areas: 1) ball sports, 2) gymnastics and dance, and 3) track and field. Each instructor will teach one class per week. The "fit for pisa" intervention addresses the problem of the discrepancy between physical education courses offered by the schools and the wishes and preferences of the students. The exploration of new types of sports is an integral part of the intervention concept. Furthermore, physical education will be instructed without gender differentiation. Instead, the children will be introduced to sports typically dominated by the opposite sex, for example, gymnastics by girls and hockey by boys.

Please insert Table 2 here

Table 2: Learning areas and contents of the intervention according to grade level

"fit for pisa" intervention				
	Grades 1 and 2 Movement education		Grades 3 and 4 Specific types of sport	
Learning area	**Subject**	**Contents**	**Subject**	**Contents**
Games	Small games	Running, chasing and catching games: • Catch • Simon says, etc. Team games: • Dodgeball • Treasure hunt, etc.	Ball sports	Ball and team sports: • Mini-basketball • Soccer • Hockey • Table tennis • Soft tennis, etc.
Gymnastics and movement	Apparatus gymnastics	Explore and practice a range of different movement activities using large and small equipment: • Apparatus obstacle course • Balance exercises • Swings and rockers • Climbing and hanging	Apparatus gymnastics	Learning fine-motor skills: • Forward and backward rolls • Flips • Swinging on still rings • Vault

		• Hopping and jumping, etc.		
Gymnastics, rhythm & dance	Rhythm and dance	Fundamental skills in gymnastics, rhythm & dance • Synchronized movements • Singing, etc.	Rhythm and dance	Simple forms of rhythmic gymnastics • Synchronized movements • Small dances, etc.
Running, jumping, throwing and hiking	Athletic sports	Practicing elementary athletic skills: • Using running tracks • Participating in races • Throwing and catching with a partner, etc.	Athletic sports	Practicing elementary athletic skills: • Orienteering • Sprints • Long jump • Shot put, etc.
Balance	Balance	Balance exercises: • Balancing on barrels • Balancing on a wobble board • Learning to use pedalos, etc.	Balance	–

Quality management

The "fit for pisa" intervention is based on quality standards. During intervention planning, professional and scientific knowledge from different disciplines was integrated in the concept during a one-year preparatory phase to ensure concept quality. Checklists were developed to document implementation of the daily physical education concept. The initiators developed an accompanying theory-based evaluation system, which was implemented and put into practice from the beginning of the project (Henze 2007).

The schools must have a gymnasium or sports hall of adequate size and adequate sports equipment and materials to ensure adequate structural quality of the daily physical education program. Since most of the primary schools did not meet this requirement, we inspected each school in advance to determine to what extent outdoor areas, classrooms and school auditoriums could be used as alternative physical education facilities. The cooperating sports club (ASC Göttingen) provided the external trainers and teacher training (certification). ASC Göttingen also provided sports materials and equipment to schools lacking these materials (Henze 2007).

Teacher training is held at the participating schools once a month to promote standardized implementation and quality management (process quality) of the intervention program. Unlike many other primary school teachers, the intervention teachers have basic certification in physical education (German Sports Federation 2006). Additional monthly meetings are held so that any problems, deviations or other issues occurring in the classes can be discussed. Checklists are provided for the teachers and external trainers to document the content and objectives of each lesson (strength, speed, endurance, flexibility, orientation, etc.). Other aspects of teacher-student interaction (e.g., class disruptions, tardiness and non-participation) and the amount of effective class time are also noted on the checklists. Supervisors managed by the sports club evaluate the checklists at regular intervals. Quarterly meetings are held to discuss theoretical concepts and practical possibilities. Didactic and methodological approaches and spatial organizational variations are main areas of focus. Continuing education courses with external trainers (e.g., on the construction and management of movement activity landscapes or on strengthening one's own health resources) are also offered by the project team. This serves to ensure process quality and to involve the teachers in more project events. Teachers cannot implement the intervention concept at

school with conviction unless they themselves are convinced of its merit and unless the concept reflects their personal attitude towards physical education.

Evaluation

In order to evaluate the intervention outcomes (outcome quality), data on relevant parameters have been gathered from the participating institutions since the start of the intervention. The scientific evaluation will provide insight into the health and education-related effects and sustainability of four years of daily physical education in primary schools. The evaluation should provide information of the benefits of the intervention for specific target groups, such as boys, girls, the children of parents with a low socioeconomic status, children with physical impairments, and overweight or obese children. This information can be used to develop practice-oriented action plans for specific communities, grade levels and subgroups, etc. Furthermore, quality testing increases the attractiveness of the individual schools. A medical history and examination, sports test for assessment of motor development, and standardized questionnaire for assessment of emotional state in all students have been performed annually since the 2003/2004 school year.

Furthermore, quality of life, attention and concentration, violent behavior, recreational behavior and physical activity are assessed at the end of the 4th, 5th and 6th grade. Most of the tools used for the analysis are standardized and validated instruments for which representative reference data on children in the corresponding age groups are available. A parental questionnaire is used to assess the child's medical history and the family's physical activity and socioeconomic status. Moreover, the school principals, teachers, external trainers and parents are surveyed on the potentials of and barriers to daily physical education in guideline interviews. Surveys conducted at the end of the 5th and 6th grades serve to test the sustainability of the effects of the intervention. The evaluation of the sustainability of effects and cost effectiveness of daily school physical education (2007 to 2010) is supported by a grant from the Federal Ministry of Education and Research (Walter et al. 2008). The results of the evaluation, including the health and economic analyses, will provide a basis for future decisions and investments regarding education, health and sports.

Conclusions

The "fit for pisa" intervention has responded to the many demands for daily physical education in primary school and implemented them into practice at five primary schools in Göttingen, Germany. Standardized implementation of the intervention by specifically trained external trainers and the use of a specifically developed and mandatory curriculum serves to enhance the quality of instruction. This is ensured by concomitant quality management and continuous supervision. This quantitatively enhanced school physical education intervention concept focuses on integration of the interests of the students and exploration of new types of sports. Classes are organized according to the availability of school facilities and resources, including previously unused alternatives (Henze 2007). The sustainability assessment performed one and two years after completion of the intervention serves to assess the impact of the intervention on health- and education-related outcomes. Gender-specific and socioeconomic variables are specifically considered and analyzed. In addition, the structural conditions for daily physical education, obstacles to it and their solution will be systematically analyzed in order to obtain evidence for comprehensive and coordinated implementation of a movement-oriented activity program and to estimate the amount of investments needed (Walter et al. 2008). The curricular

integration of daily physical education in school—a place where children spend a large part of their lives—will promote physical activity at all schools. As it was implemented in the school setting, the intervention will contribute to improving the equality of opportunity for all children, including those from socially disadvantaged communities, which frequently lack an adequate infrastructure of recreational facilities encouraging physical activity.

However, coordinated comprehensive national and international programs to promote physical activity and sports participation are still lacking. Despite the active involvement of cooperation groups, it must not be forgotten that the responsibility for physical education and movement education for children in Germany falls under the jurisdiction of each state's Ministry of Culture and Education.

Conflict of interest

The authors declare that they have no conflict of interest.

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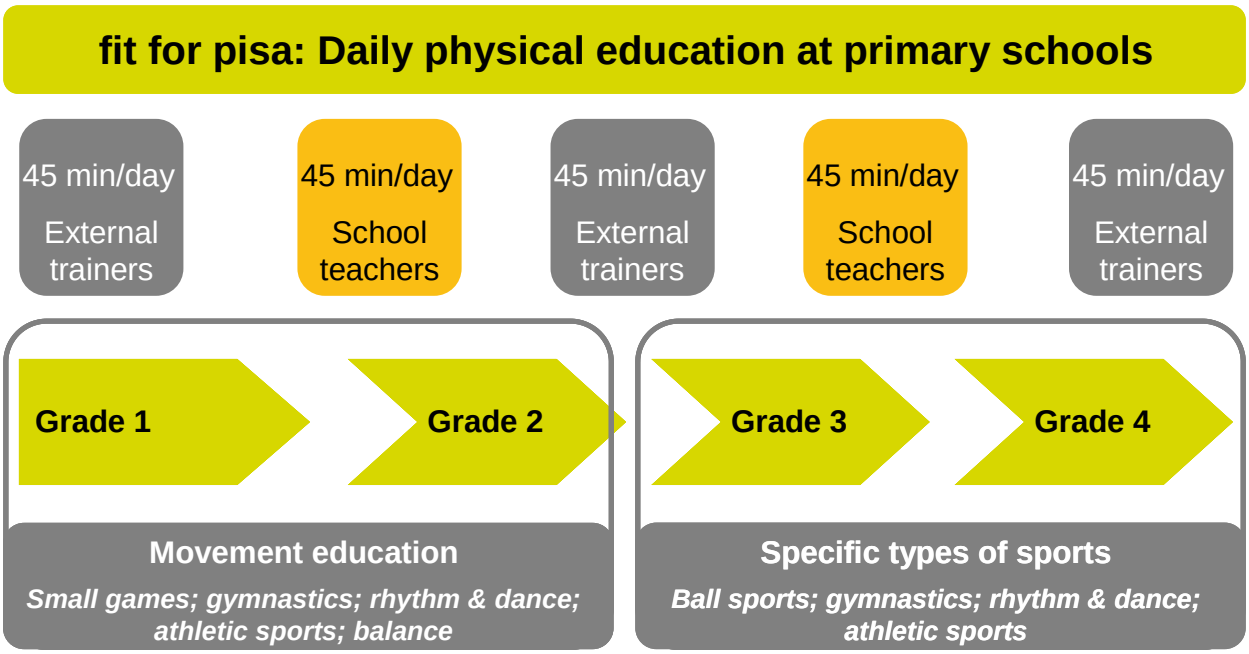

Figure 2: fit for pisa intervention

Table 3: Learning objectives of the "fit for pisa" intervention (adapted from Henze 2007)

Skills and abilities	Learning objectives of the "fit for pisa" intervention
Specific sports-related skills	• Acquire skills in different movement patterns • Improve motor skills • Acquire skills in sports-specific techniques • Improve agility • Learn team games • Improve skills using large and small sports equipment • Movement, dancing to music • Gain experience moving in and out of the water
Physical motor skills	• Learn body awareness and control • Develop physical experiences • Learn to make self-assessments of oneself and one's abilities • Improved coordination and fitness
Social skills:	• Enjoyment of sports activities • Acquire social competence • Develop cooperation skills • Learn to deal with winning and losing
Affective skills	• Discovering the fun and enjoyment of sports • Dealing with happiness, anger, irritation and sadness • Increase motivation to learn and achieve
Cognitive skills	• Learn and execute a variety of movement and game forms • Learn to solve problems alone and in a group • Learn safety issues related to physical education and to assess and manage risks • Learn to make self-assessments of one's own skills and abilities • Learn and abide by rules

Table 4: Learning areas and contents of the intervention according to grade level

"fit for pisa" intervention				
	Grades 1 and 2 Movement education		Grades 3 and 4 Specific types of sport	
Learning area	**Subject**	**Contents**	**Subject**	**Contents**
Games	Small games	Running, chasing and catching games: • Catch • Simon says, etc. Team games: • Dodgeball • Treasure hunt, etc.	Ball sports	Ball and team sports: • Mini-basketball • Soccer • Hockey • Table tennis • Soft tennis, etc.
Gymnastics and movement	Apparatus gymnastics	Explore and practice a range of different movement activities using large and small equipment: • Apparatus obstacle course • Balance exercises • Swings and rockers • Climbing and hanging • Hopping and jumping, etc.	Apparatus gymnastics	Learning fine-motor skills: • Forward and backward rolls • Flips • Swinging on still rings • Vault
Gymnastics, rhythm & dance	Rhythm and dance	Fundamental skills in gymnastics, rhythm & dance • Synchronized movements • Singing, etc.	Rhythm and dance	Simple forms of rhythmic gymnastics • Synchronized movements • Small dances, etc.
Running, jumping, throwing and hiking	Athletic sports	Practicing elementary athletic skills: • Using running tracks • Participating in races • Throwing and catching with a partner, etc.	Athletic sports	Practicing elementary athletic skills: • Orienteering • Sprints • Long jump • Shot put, etc.
Balance	Balance	Balance exercises: • Balancing on barrels • Balancing on a wobble board • Learning to use pedalos, etc.	Balance	–