

# FROM PAST TILL PRESENCE — THE QUALITY OF GERMAN PHYSICAL ACTIVITY KINDERGARTEN (PAK)

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**Abstract.** Physical Activity Education (PAE) has always been playing an important role in the history of Early Childhood Education (ECE) in Germany and its institutionalized form called “Kindergarten”. As a key feature of Kindergarten quality Physical Activity (PA) was originally considered to be either a compensation for children’s health dangers along with the neglect by their hard working mothers or a mere medium for other developmental fields such as cognition or social behavior. The subjectively observed outcome for the pedagogues was far from empirically objective evidence. Till the 1970s neither the technical term “quality” nor any empirical quality standards existed in German ECE to assess the effect of PA in Kindergarten. This fairly hasn’t changed yet although some general findings of high quality effects can be reported as well as PA specific results from a recent review on systematic PAE programmes. Despite this fact, Germany’s organized sports associations (OSA) installed 1759 Physical Activity Kindergarten (PAK) with great expectations in their overall positive developmental effect. For quality assurance some criteria were developed to achieve a minimum standard level. Subsequently a very popular license originated without having evidence for its positive outcome. A randomized, controlled longitudinal study is still to come.

**Key words:** physical activity kindergarten, quality, early childhood education

## Introduction

What makes a good or even ideal Kindergarten? And what role does Physical Activity (PA) as an educational and health dimension play in this question? As long as the researcher’s notion doesn’t only refer to a single institution of Early Childhood Education (ECE) but to *the* Kindergarten as such, probably the most elaborated answer given in Germany lies in the model of Tietze and Viernickel (2007). Not less than 1783 quality criteria, divided up into 21 quality dimensions and six transversal pedagogic principles claim “best practice” (dito, p. 27). The sheer amount of criteria derives from a nationwide quality initiative (NQI) by the Federal Ministry of Family, Elderly People, Women

and Youth (BMFSFJ) aiming at a consensual framework between scientists, politicians and the municipal quality managers for what the overall quality is made of in German Kindergarten (see Table 1).

**Table 1.** The 1.783 quality criteria divided up into 21 dimensions and 6 transversal pedagogical principles of German high Kindergarten quality according to the NQI by Tietze and Viernickel (2007)

6 transversal principles	21 quality dimensions																				The 8 specific management quality criteria			
	rooms and spaces	daily organization (routines)	meals and nutrition	health and hygiene	rest and sleep	safety	language and communication	cognitive development	social-emotional development	physical activity	fantasy and role play	handcraft and construction	arts, theatre, music and dance	natural sciences	cultural diversity	integration and inclusion	familiarization	welcome and discharge	family-parent-partnership	transition to school		horizontal summation	management	
Rooms and spatial framework	18	1	14	21	9	12	9	13	9	15	5	10	10	10	8	9	5	4	8	3	193	19	leadership	
Teacher-child-interaction	10	20	18	16	12	15	54	36	59	17	16	12	21	18	32	11	23	7	24	19	440	57	organization of daily work (time management)	
Planning	14	29	27	47	20	31	26	50	39	12	13	15	19	24	50	24	21	13	8	27	509	34	human resources and personell management	
Diversity and usage of material	7	0	6	7	4	6	9	26	9	10	4	8	12	10	6	2	0	1	0	2	129	18	conceptual development	
Individualization	4	7	4	6	7	3	9	8	22	5	3	6	5	6	15	6	6	6	10	6	144	12	public relation and networking	
Participation	21	11	14	7	9	6	13	15	15	10	10	12	8	17	7	7	2	3	10	7	204	5	political engagement	
Vertical summation	74	68	83	104	61	73	120	148	153	69	51	63	75	85	118	59	57	34	60	64	1619	11	quality control and development	
																						↓	8	finance
																								→ Total of 1.783 quality criteria

With a closer look from the Physical Activity Kindergarten (PAK) perspective it is crucial to know why there should be exactly 69 quality criteria and not 120 or just 5. The simple answer is: We just don't know, because all of the 69 criteria haven't been confirmed yet in a study design that takes the developmental outcome of children by a randomized, controlled and longitudinal empirical framework into concern. Therefore, to understand why these specific quality features might be the right ones, two ways of explanation ought to be followed: first, one throws a glance at the historical roots of PAK in Germany to deduce the consolidated experience and the knowledge of best practice throughout the last 250 years. Second, one collects all data existing in general about high quality programs designed for ECE-Physical Activity interventions in Germany. Both ways will be shown in the following.

## Historical Roots

Worldwide the German pedagogue *Friedrich Wilhelm August Fröbel* (1782–1852) is supposed to be the inventor of the Kindergarten as the earliest type of institutional education in child development. In fact, this is a downright error in many of the literature about the history of German Kindergarten (Aden-Grossmann 2011; Konrad 2012). It was *Johann Friedrich Oberlin* (1740–1826) instead, a German cleric and pedagogue, who adopted the already existing idea of the Alsace-Lorraine Sara Banzet to give very young, hungry and neglected children a shelter (Burckhardt 1843a; Psczolla 1979). These snuggeries where gradually combined with more ambitious care in terms of reasonable activity and education, e.g. learning a foreign language (French), reading and writing, natural sciences and knitting. The latter is the reason why they were called “Strickstuben” (French: “poeles à tricoter”) or “knitting snuggeries”. Furthermore, Oberlin attached great importance to PA by playing physical games. On the one hand his aim was to strengthen the children’s organism and health, on the other to improve social behaviour by PA (Pelsler 2002). Altogether this very early form of Kindergarten already included the most important so called *developmental areas* or *educational fields* of modern German ECE-curriculums such as language, nature, cognition, body and health, motor and social development and ethical/religious questions (MKJS 2011; BSASFF 2012).

Beside this public-clerical approach supporting ECE, the private-economic engagement of *Robert Owen* (1771–1858) heavily influenced an additional type of German Kindergarten, so called “Betriebskindergarten” or “company-run childcare/daycare facility” (Höltersshinken 2003). Established in 1816 at the Scottish New Lanark during the Industrialization, his “Infant Schools” should relieve the hard working mothers from nursing their children, giving the former the opportunity to attend regular work throughout the day and the latter ones to read, write, knit and play physical games especially outdoors in light and fresh air (Owen 1841). Similar to Oberlin’s Strickstuben the Infant Schools not only took the important role of PA for the overall development of children into account but also Kindergarten as *the* fundament of a new, meaning better society (Owen 1813; Owen 1840).

Almost 50 Years later a second important historical step was taken with the “Kinderbewahranstalten”. These daycare centres were ECE-facilities for all children in the rapidly growing cities, where poverty, disease, crime and neglect were widespread. In terms of education, it is reported that there was (a) a sheer non-education by the mothers due to absence, going to work, (b) a bad education by surrogate mothers, neighbours or others, (c) a bad education by the mother herself as she had no time or expertise nor patience (Chimani 1832; Bönig 2012). At that time the concept by *Johann Georg Wirth* (1807-1851) on the one hand focused on the unpretentious care of the neglected children. On the other hand Kinderbewahranstalten not only supported the mothers and families by setting the parents free for work but to teach the 2–6-year-old in handcraft, singing, praying and religion, memory tasks, writing, reading, speaking clearly, arithmetic and: physical activity. Again, beside nutrition and clothing PA was considered to be the most important tool for generating health and a strong organism in ECE. Furthermore, cognitive stimulation and the training of social behaviour were serious goals of this type of Kindergarten. The PA-curriculum consisted of stretching, walking (sometimes military marching), running, jumping and bouncing around. Wirth especially accentuated the social, motor and health profits of playing outdoors on the facility’s own playground. Some years later the “Kleinkindschulen”, e.g. by *Johannes Fölsing* (1816–1882), were based on the same previous content but with a new emphasis highlighting the preparation for real school by extending and deepening learning exercise. That comprised a disciplined type of learning and more earnest, functionalized play. This type of Kindergarten, more school than an appropriate ECE-centre, used PA (“Leibeserziehung”) as a compensation for the more intellectual and cognitive challenging instruction based learning (Fölsing 1846, 1848). In the course of this major milestone





**Figure 2.** “Marching of the troops”. Physical activity education as a marching game in a Munich Kindergarten in 1914. By courtesy of Dr. Günter Erning, picture archive Bamberg

Gradually new pedagogical ideas tried to resist the educational suppression by reinventing the perspective on childhood as such. Initiated by a former Kindergarten teacher of Fröbel, *Henriette Schrader-Breymann* (1827–1899), quality in Kindergarten was less measured according to neither the preparation success for school nor the repression of developmental fields in order to form dutiful soldiers (1894/1962). Instead, by the end of the 19th century, the so called “Reformpädagogik” (Engl.: “reformist pedagogy” or “progressive education”) gave back the principles of individualization, total developmental support for children, co-operative relationship with the teacher, self-determined leisure time activities and the experience of nature and freedom. Especially *Maria Montessori* (1870–1952) heavily influenced the ECE-system with a new picture portraying children being active, creative, constructive and competent draftsmen of themselves (Ital.: “costruttore”) (Montessori 1965, 1972). The German “Montessori-Kindergarten” in 1919 by *Clara Grunwald* (1877–1943) was consequently designed as a virtual PA-Kindergarten, where children learned and grew up locomotively autonomous and self-reliant using specially designed materials and learning environments (Grunwald 1920, 1995). So far, physical education has never been so important.

Ironically, the predominant role of PA in ECE not only persisted till 1933, when Reformpädagogik ideas were displaced by National Socialism. On the contrary, the Nazis even strengthened PA education (PAE) to the utmost conceivable state. The leading ECE principles of this new “Leibeserziehung” then were: selection of the strongest children to further support them and filtering the weak ones, body hygiene and racial health, discipline and absolute obedience to the “Führer” and the willingness to sacrifice oneself for one’s own country (Rauschnig 1940; Vorländer 1988). These political goals were transformed into concrete exercises and PA-units as there were athletics with running, throwing (as a preparation for using the hand grenade) and jumping, outdoor gymnastics (fresh air and light hypothesis; Benzing 1942) or competition games with winners and losers in terms of the selection quality feature (Ivers 1935). For the first time, the quality outcome and effects of PAE-efforts were empirically measured e.g. with motor diagnostic in athletics. In addition, three scientific institutes were founded to explore the deeper origin of race psychology and development to give the Kindergarten teachers precise information about how

to execute high quality PA-didactics (PAD) in terms of National Socialism ideology. Overall, PAE was the key to a total quality management in ECE with a new Aryan race as the target group.

After the Second World War the ECE-system was completely devastated. The need for a reliable, innocuous PAD led the pedagogues back to the ideas of the Reformpädagogik, where PA was the fundament of physically exploring nature and culture. The facilities were still called Kindergarten and were again given a strong part in the educational system of the new Federal Republic of Germany (western part) by law. Even more, in the 1970s the powerful German Education Council officially referred to the term “quality” for the very first time by using scientifically generated data on an empirical-objective basis. In the course of this scientifically grounded ECE the introduction of what we currently know the “Bewegungskindergarten” or Physical Activity Kindergarten (PAK) took place.

The first type of PAK called “Sportkindergarten” was founded in 1972 at Freiburg i.Br. by a local gymnastics club (Zimmer 1993; Schaffner, 2005). The quintessence of modern PAK in contrast to the mere additive way of using PA as an educational medium was to define PA as the inner core of the pedagogic concept of an ECE-facility. However, this integrated and transversal strategy at that time was designed to prepare mainly for the sports culture, meaning a strong focus on training principles and motor skill acquisition rather than a broad and self-directed experience of whatever learning situation in a variable motor developmental perspective. The first aspect mentioned became known as the *education for sport* in the sense of simply teaching an already existing sport culture with its corresponding techniques. The second aspect, *education through sport/physical activity*, underlined the wide range of motor situations not necessarily dependent on cultural guidelines. It refers to a free and open motor development using human motor behavior not only as a means of transporting other developmental fields such as cognition, language, social behavior or health – just as Oberlin did 200 years ago (Prohl 1999). But also as a means for itself, meaning PA without any deeper pedagogical requirements but just for fun and as a human basic need. Especially Zimmer appears to be a prominent pioneer of this new scientific understanding of sport pedagogy in Kindergarten called “Bewegungserziehung” (1993, 2006) which is currently pursued by Schwarz (2014a) on an even more empirical basis. Today we exactly find 1759 PAKs in Germany, licensed by the specific OSA of each federal state in Germany of which 16 exist (status: 31.12.2014, Schwarz 2015). That’s 3.25% of all ECE-facilities (Destatis 2014) with a monthly growth rate of 17 PAKs all over Germany. The crucial question within the current quality debate is whether these modern PAKs can really keep the promise they pretend, due to an overall positive effect on relevant developmental fields.

## General and specific empirical evidence

Until now not a single empirical study on a reliable, objective or valid level has been published in Germany to examine the sustainable effects of a modern OSA-licensed PAK on distinguished developmental fields except one to come (Schwarz 2015, in prep.). The only thing we know is a collection of all the quality criteria PAKs consist of, five to eleven in number: (1) co-operation with sports clubs or other health and sports related institutions, (2) a high qualification of the PE Kindergarten teachers in special courses, (3) a designated pedagogical concept with PA and motor development at its heart, (4) offering an appropriate time to move and being physically active indoors and outdoors, (5) special activity rooms (“Bewegungsräume”) both indoors and outdoors, (6) the right material, (7) family partnership (work and act together with the parents), (8) public relations and networking, (9) documentation of all quality measures, (10) mobility of parents bringing their children to Kindergarten and finally (11) the motor safety of

the facility. But can a maximum amount of eleven criteria encompass the entire PA-quality of a complex ECE-centre, even more if the general NQI suggests 69 features? Apart from empirical evidence this rhetorical question can be critically answered by a simple theoretical argumentation. Taking the feature number five “special activity rooms” into account very often the PAK concepts speak of “enough”, “appropriate”, “stimulating” or “childlike” space. Still, when is “enough” enough? The only satisfactory answer obviously is a quantitative one, because it helps to precisely differ a good from a bad activity space. No one can say – using for example a binary logistic regression – whether the Odds Ratio (OR) of more or less 10m<sup>2</sup> outdoor space makes the significant difference with a high power in a certain dimension of developmental promotion. Thus even the little amount of motor quality criteria of PAKs tends to have weaknesses in its construction of validity within as they lack of accurate cutoffs. Furthermore, the PAK criteria are predominantly of a structural character neglecting the vital processes. As the pioneer of defining “quality” as such in the medical and health area, Avedis Donabedian (1966, 1980), differentiates between three quality dimensions, namely *structure* (a. input, b. organization), *process* (a. content, b. configuration) and *outcome* (a. end point, b. impact) it is quite obvious, that most of the PAK criteria can be placed singularly in the structural dimension. Table 2 shows the transformation of the Donabedian model on an ECE-facility in general and PAKs specifically.

**Table 2.** Fundamental model of quality dimensions transferred to ECE facilities and PAKs according to Donabedian (1966, 1980)

Structure: a. Inputs, b. Organization	Process: a. Content, b. Configuration	Outcome: a. End Point, b. Impact
<p>Basic meaning: Defines the relatively stable framework for the activities of people in an organization and the results of their actions. The spatial, time, financial, personal and material resources belong to this dimension.</p> <p>Examples in PAK:                      – Size of facility (m<sup>2</sup>)                      – teacher-children-ratio                      – Size of children groups (units)                      – Grade of staff qualification                      – Type of working material and toys                      – Network and co-operation agreement and treaties                      – Safety requirements and hygiene                      – Education curriculum and concept                      – Number and content of further job training</p>	<p>Basic meaning: Total of all observable activities and services that produce an outcome in type and number</p> <p>Examples in PAK:                      – Familiarization and admission of children                      – Interaction with children (e.g. responsibility)                      – Direct co-operation with parents                      – Involvement of parents into the day-care and total quality management (e.g. workshops conducted by parents)                      – Interaction between day-care manager and municipality                      – Visibility of content, goals and results of the everyday work (e.g. pictures pinned on the information board, data documentation, etc.)                      – Means of scaffolding e.g. in the gymnasium</p>	<p>Basic meaning: The observable results and effects on the target group that evidently can be derived from the overall input (input-outcome-difference)</p> <p>Examples in PAK:                      – Well-being of children                      – Satisfaction of parents                      – Developmental progress of the children in the educational fields of cognition, language, body and health, physical activity, sensual development, social behaviour, religion, etc.                      – Prosperity of society (overall effects of ECE on later outcomes e.g. higher net-incomes, lower crime rate, etc.)</p>

Tietze (1998) and Tietze et al. (2005) examined the influence of the structural and the process dimensions on the outcome as measured by the developmental progress in selected fields of ECE. Accordingly it seems evident that

- the structural input considerably influences the pedagogical process quality ( $R^2 = 0.48^{***}$ ; blockwise-hierarchical regression) i.e. nearly half of the statistical differences correlating to process quality may be explained by variables of structural quality. That especially applies for the job experience of Kindergarten teachers, the teacher-children-relation (e.g. 1 : 8), the duration of opening hours and the space offered (m<sup>2</sup>).

- Second, the quality of pedagogical processes preferentially in families and subordinately in ECE-facilities significantly correlate with the social ( $R^2 \approx 0.20^*$ ), linguistic ( $R^2 \approx 0.32^*$ ) and the outcome of life competence ( $R^2 \approx 0.31^*$ ).

Dohmen (2005) summarizes the empirical effects of structural and process quality on the outcome with respect to their sustainability in general (Table 3).

**Table 3.** Short-, medium- and long-term effects of a better structural and process quality on the children's outcome (developmental fields)

Short-term	Medium-term	Long-term
– higher IQ	– earlier school enrolment	– derive one's income earlier
– more pro-social behaviour	– leaving school earlier	– higher net-income
– better nutrition	– higher probability of attending higher education e.g. university	– lower risk of unemployment
– better overall health and well-being	– more pro-social behaviour	– higher job productivity
– higher self-esteem		– lower crime rate, more pro-social behaviour
– improved parent-child-interaction		
– higher self-contentment		

Schwarz (2014b) collects all data existing in particular about high quality programs designed for ECE-Physical Activity interventions in Germany. This latest review comprises all systematically, controlled longitudinal studies ever conducted in Germany from 1980–2013 examining effects on children's outcome (motor development, cognition, social-emotional development and physical health). Other inclusion criteria were duration of intervention ( $\geq 6$  months), a minimum of two measure points, age between three and eight years, at least two dependent variables (motor development plus x) and a sample size of  $N \geq 25$ . The result: 14 studies comply with the methodical requirements (Table 4).

**Table 4.** Review of controlled longitudinal studies in Germany (1980–2013) on the effects of systematically designed PA intervention programmes in ECE-facilities,  $N = 14$

Target variable	Outcome – Effects on dependant variables
Motor development	PA intervention programmes (Motor behaviour as influencing variable) have a positive effect almost every time they are applied on motor development. Ten out of 14 studies show significant results. Main outcome: the weaker the children (retarded), the earlier they get more physically active (very early PAE) and the more often they get intervened (daily intervention) the stronger the effects (max. $\eta^2 = 0.33$ ; MANOVA over time).
Cognition	Six studies deliver findings on cognition, mainly dealing with IQ-tests, sometimes concentration and very rarely to memory. Correlations range from 0.22** to 0.40*** at the IQ and between 0.31** to 0.46*** at the concentration findings. Memory results are very heterogeneous.
Social-emotional development	Inconsistent findings: very positive results face totally absent effects on the contrary. This can be explained by a different understanding of how to define social-emotional development. There is not a single study using interference statistics.
Physical health	Studies ( $N = 6$ ) on this target variable are mainly of medical and public health character. The findings show low blood pressure ( $p < 0.001$ ), increase of abdominal muscle strength ( $\alpha = 0.002$ ), decrease of subcutaneous adipose tissue ( $p = 0.13$ ), deeper and more regular sleep. There are no psychosomatic effects examined at all in the long run.

From a qualitative perspective these systematic PA interventions may be of some reasonable effect on the outcome. But concerning the structural or process input there are only confuse notions about what really works. These imprecise intervention variables are (1) intensive qualification of Kindergarten teachers, (2) variable application of material and PA toys, (3) motivating (childlike) PA content, (4) better timing of PA units and didactically structuring them, (5) integration of the parents as a role model (PA at home), (6) re-designing of rooms indoor and outdoor (more space) and finally (7) using a handbook of documentation and manual of reliable quality standards. However, there is little known about the exact empirical effects of these rather ‘variables of tendency’.

Therefore, the author is in the line with the theoretical claims of Leu (2005) and Tietze and Förster (2005) that licensed Kindergartens should fulfill several meta-requirements. Without them, a further, mere quantitative expansion of OSA-licensed PAKs would be at least questionable:

- A consensual quality definition has to be found. Only if there is a mutual understanding the generalization of appropriate criteria is successful.
- This general validity implies an intensified empirical objective research, separating the sheep from the goats.
- To do this one clearly needs operationalized and therefore measurable indicators for the quality standards to describe, analyze and interpret Kindergarten quality.
- Such sort of evaluation is not for laypersons but for experts and scientific staff, meaning that a high quality certification, like the announced PAKs, needs high quality evaluators that ought to be neutral.

## Conclusion

Since the installation of Kindergarten in Germany PAE has always been playing a vital role in the ECE-curriculums. On a very plain level it seemed subjectively obvious for former pedagogues that motor intervention is a fundamental key to satisfy basic needs of children. The main function of PAE till the middle of the 19th century was compensating the health dangers in the wake of growing cities or the neglect by the working mothers. A high quality Kindergarten in this sense helped to keep children alive and somehow engaged. Later on PAE became a medium of preparation for school and forming the children as a good serving member for society and soldiers at war times. High quality in Kindergarten saved the outcome as a somehow ‘social investment’. It wasn’t until the end of the 19th century when a new perspective arose wherein children were considered to be active and creative by nature with fundamental rights for autonomy and self-determination. Forty years after the Second World War this attitude became the leading principle not only in ECE in general but also in PAE.

The “Bewegungskindergarten” (PAK) of Germany’s organized sports associations (OSA) picked up the traditionally high expectations considering the effects of PAE and installed a minimum quality management by designing some criteria as a matter of quality assurance. However, only some general findings of high quality effects can be reported as well as PA specific results from a recent review on systematically designed PAE programmes. Despite this fact, Germany’s OSA are still expanding Physical Activity Kindergarten (PAK) believing in their overall positive developmental effect. Subsequently a very popular license originated without having evidence for its positive outcome. A randomized, controlled longitudinal study is still to come.

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**Cite this article as:** Schwarz R. From Past till Presence – The Quality of German Physical Activity Kindergarten (PAK). *Central European Journal of Sport Sciences and Medicine*. 2015; 11 (3): 103–113.

