

Qualification and implication of kindergarten teachers towards physical education

Cualificación e implicación del profesorado de infantil frente a la educación motriz

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Abstract

The aim of this study was to determine the relationship between the type of teacher training in physical education and the actual active learning time in school physical education. The sample was composed of 349 active kindergarten teachers from 59 Spanish schools. Data were collected through the "Health Education through Physical Education in Kindergarten Questionnaire" of which sixteen variables were analyzed, providing information about the active learning time in physical education, teacher's perception of time needed a week to implement a physical education program, perceived difficulties in physical education implementation, and the type of physical education teacher training received by the subjects. The results indicate that the higher the teachers' physical education training qualifications, the more time they think is needed to implement physical education and the higher the active learning time in physical education. None of the perceived difficulties was associated with teachers' specific training in physical education. Conclusions: Specific training programs to increase kindergarten teachers' qualification in physical education could increase motor experiences in the kindergarten curriculum, as well as physical activity in the early ages.

Keywords

Physical education; early childhood education; school; teacher training.

Resumen

Este estudio determina si existe una relación entre la formación específica en educación motriz con la que cuenta el profesorado y el tiempo que dedica este en su desempeño profesional al aprendizaje de la educación motriz en la escuela. Participaron un total de 349 profesores de educación infantil en ejercicio de 59 centros educativos españoles. Se empleó el “Cuestionario sobre la educación para la salud a través de la educación motriz en educación infantil”. Se analizan un total de 16 variables que recogen información sobre el tiempo dedicado y la percepción del profesorado sobre el tiempo semanal necesario para implementar un programa de educación motriz, las dificultades percibidas en el desarrollo de la educación motriz y sobre la formación específica recibida en educación motriz por parte del profesorado. Se emplearon los coeficientes *d de Somers*, *V de Cramer* y la prueba ANOVA. Se estableció un nivel de significatividad de $p < 0,05$. Resultados: La mayoría de maestros y maestras de educación infantil han recibido muy poca formación en educación motriz. A mayor cualificación específica en educación motriz del docente, mayor es el tiempo que considera necesario para el desarrollo de la educación motriz en el centro, y mayor es su dedicación semanal. Ninguna de las dificultades percibidas se asocia con la formación específica en educación motriz del profesorado. Conclusión: Programas de formación específica para aumentar la cualificación en educación motriz de los maestros y las maestras de educación infantil podrían incrementar las experiencias motrices en el currículo de educación infantil y la actividad física desde edades tempranas.

Palabras Clave

Educación motriz; educación infantil; escuela; formación de maestros.

Introduction

In the health sphere, regular physical activity favors quality of life in its four dimensions. On the one hand, it promotes longevity and reduces the probability of suffering from biological diseases (Tasic & Lovic, 2018), and, on the other, it produces cognitive and affective benefits (Carlson et al., 2008; Giles et al., 2017), at the same time as it stimulates social relations (Lineweaver, Kugler, Rabellino, & Stephan, 2017). In this sense, physical education and its teaching staff are factors that help students to achieve a healthy lifestyle (Brodani, Paska, & Liparova, 2017; Brodani & Ziskova, 2015; Codella, Terruzzi, & Lucy, 2017; Nuviala, Gómez, Pérez, & Nuviala, 2011).

At the kindergarten stage, many foundations for numerous behavior patterns are established, which have a great impact on healthy development during the adult stage. Recent

studies confirm that young children's physical-sport experiences favor healthy physical-sport behaviors in adulthood (Ponce de León & Sanz, 2014; Williams et al., 2008). More specifically, the results of various investigations confirm that the integration of motor experiences in the kindergarten curriculum is a potentially effective strategy to promote physical activity (Alhassan et al., 2012; Goldfield, Harvey, Grattan, & Adamo, 2012; Ward, Vaughn, McWilliams, & Hales, 2010). All these arguments endorse the importance of physical education in childhood, as it benefits construction of children's personalities, thereby optimizing their comprehensive development and quality of life, facilitating the acquisition of healthy habits that last their entire lifetime. Therefore, in kindergarten, physical education can promote children's growth and comprehensive development, fostering the acquisition of physical, cognitive, affective, and social competences (Delgado & Montes, 2017; Gutiérrez, Fontenla, Cons, Rodríguez, & Pazos, 2017; Pons & Arufe, 2016; Ward, 2010).

In addition, the need and importance of physical education in the kindergarten stage is clearly justified in the educational legislation that regulates it. Currently, despite Law 8/2013 of December 9, for the improvement of educational quality - LOMCE- (BOE of December 10) being in force, the law does not modify any aspect related to the kindergarten stage, so it is necessary to take as reference the Organic Law of Education 2/2006 of May 3, - LOE - (BOE of May 4th), as well as its context, the minimum teachings of the second cycle of kindergarten, and, as a reference point, the Royal Decree 1630/2006 of December 29, which establishes these teachings (BOE, January 4, 2007).

Taking into account the working methods and the purpose of this educational stage, Article 4 of the Royal Decree 1630/2006 highlights that the implementation of physical education in kindergarten should follow a global and interdisciplinary perspective, working on mobility through different areas of the curriculum: Self-knowledge and personal autonomy, Knowledge of the environment, and Languages: communication and representation (Article 6 of the Royal Decree 1630/2006), with the aim of influencing all aspects of children's behavior through the interrelation of the motor contents. Thus, the motor aspects present in kindergarten are distributed among the general objectives of this stage, in different areas, as well as in the

blocks of content that integrate them. Any general goal of this stage, designated in Article 3 of the Royal Decree 1630/2006, is closely related to physical education. Likewise, many motor aspects are linked to the contents of each block of the three areas of the curriculum.

On the other hand, numerous studies analyze the conditions in which motor activity is developed in kindergarten. Some of them indicate that the number, type, and variety of spaces and mobile materials—balls, hoops—could explain the variability of motor activity development in the centers (Bower et al., 2008; Brown et al., 2009; Cardon, Van Cauwenberghe, Labarque, Haerens, & De Bourdeaudhuij, 2008; Cosco, Moore, & Islam, 2010; Dowda et al., 2009). Nevertheless, in order to implement physical activity in the kindergarten centers, not only are the material resources necessary, the existing scientific literature clearly shows that teachers' high qualification, involvement, and motivation contribute to a greater frequency of the performance of motor activities (Copeland et al., 2011; Gregorc, Mesko, Videmsek, & Stihec, 2012).

Ultimately, scientific evidence indicates that the material and spatial resources, the organization of the school, and the teachers' training in physical education are factors that can influence the development in this area, but Gregorc et al. (2012, p. 78) conclude that "a good teacher is one who can work well both with good and poor material conditions."

In view of these antecedents, the goal of the present study is to verify whether there is a relation between the teaching staff's specific training in physical education and the time they spend on active learning in physical education and their perception of difficulties to develop physical education in school.

Material and method

Participants

The sample was made up of 349 active kindergarten teachers from 59 Spanish schools, 21 males and 328 females. Concerning the sample's age, 25.8% were younger than 30 years old, 36.1% were between 30 and 40 years, 26.1% were between 41 and 50, and 12% were older than 50. Of the sample, 44.5% carried out their profession in Kindergarten centers of the

province capital, and 55.5% in centers located outside of the province capital. According to center ownership, 72.5% were teaching in public schools, and 27.5% were in teaching in subsidized-private schools.

Instrument

To detect the difficulties perceived by kindergarten teachers in the treatment of physical education, we used Items 13, 16, 27, and 29 of the questionnaire validated by Sanz, Alonso, Valdemoros, and Ponce de León (2013) on education for health through physical education in kindergarten.

A total of 16 variables were analyzed in this study. Two of them collected information about the time spent and the teachers' perception of the weekly time necessary to implement a program of physical education. Thirteen items collect information about the difficulties to develop physical education; and another item records the specific training in physical education received by the teachers (Table 1).

Items	Questions	Categories
13	<i>Weekly time dedicated to physical education</i>	<i>Does not work on physical education / Less than 1 hour/ Between 1 and 2 hours / 3 or more hours</i>
16	<i>Amount of time considered necessary to spend on physical education</i>	<i>I don't consider it necessary / Less than 1 hour / Between 1 and 2 hours / 3 or more hours</i>
13, 16	<i>Amount of time considered necessary to spent on physical education vs. weekly time actually dedicated to physical education</i>	<i>Less time than I really spend /The same time as I really spend / More time than I really spend</i>
27	<i>Do you have difficulties to develop physical education? If your answer is affirmative, mark the difficulties you consider and number them by priority, assigning 1 to the factor you think poses the greatest difficulty, and so on.</i>	<i>Too many students / Too few students / Students' extreme youth / The center has no spaces / The center has spaces but they are reserved for other stages / Insufficient time / Scarce material resources / Scarce personal resources / Rigid schedule / Lack of training / Lack of teachers'</i>

		<i>motivation / There are no factors conditioning the practice of physical education</i>
29	<i>Number of difficulties found for the development of physical education</i>	<i>(Metric Variable)</i>

Figure No. 1. Variables analyzed in the study.

Procedure

Before administering the questionnaire, permission was requested from the directors of the educational centers in which some of the participants were teaching. The information was collected after the questionnaire was personally delivered to each of the teachers selected for the sample at their school. The teachers were asked for their anonymous and voluntary collaboration, and for sincere responses.

Data analysis

We used contingency tables to study the association between non-quantitative variables.

In those cases in which the variables under study were ordinal, we used Somers' *d* coefficient to determine, not only the degree, but also the direction of the association. With this coefficient, we studied the associations between the following aspects:

- a) Number of courses of physical education received by the teacher and the current weekly time actually spent teaching physical education.
- b) The amount of weekly time that the teacher considered necessary to work on physical education and the current weekly time actually spent teaching physical education.

We calculated the Cramer's *V* coefficient to determine the degree and the direction of the association between nominal variables like those analyzed herein and each of the perceived difficulties to teach physical education with each of the remaining variables.

To study the behavior of the quantitative variables, we performed ANOVA. In particular, we compared the means of the number of problems identified by the teachers regarding the time spent on physical education, the amount of time they considered necessary

to spend on physical education, and the number of courses they had received on physical education.

For all statistical tests, a level of significance of $p < .05$ was established.

Results

Regarding training in physical education, 31.5% of the teachers had not received any specific course in this area, 47.8% had attended one or two courses, and 20.1% had extended their qualification with three or more courses on motricity.

Bivariate analysis detected that the number of physical education courses was weakly but significantly associated with the amount of weekly time teachers considered necessary to spend on physical education (Somers' $d = .120, p = .032$) and with the actual time dedicated to physical education (Somers' $d = .131, p = .011$). As the teachers increased the amount of physical education training, their perception of the amount of time necessary to spend on physical education also increased (Figure 2), as did the real time actually spent on physical education per week (Figure 3).

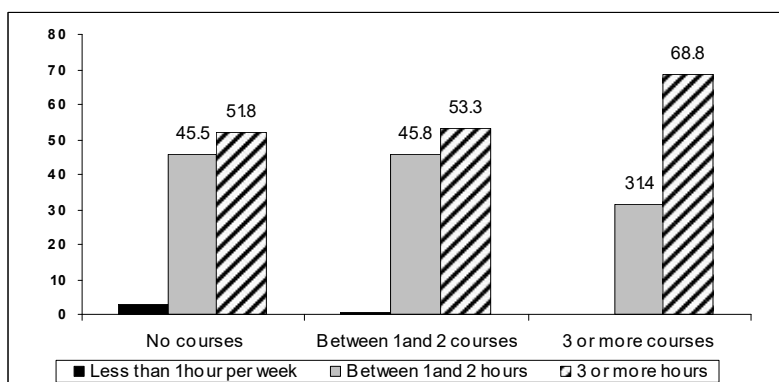


Figure No. 2. Distribution of teachers (%). Number of physical education courses received and amount of weekly time considered necessary to spend on physical education.

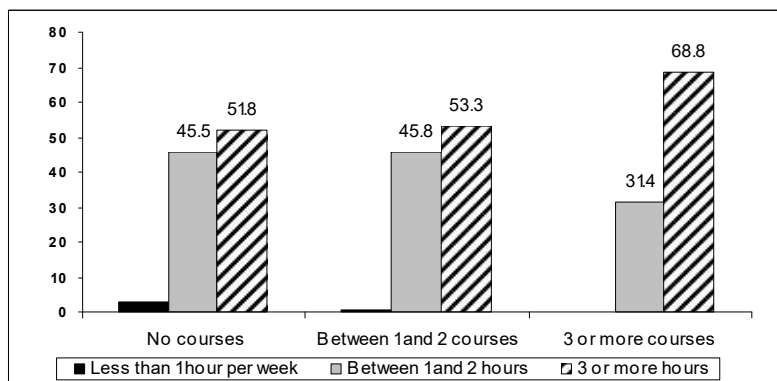


Figure No. 3. Distribution of teachers (%). Number of courses received in physical education and real time spent on physical education.

Whereas 36.2% of the kindergarten teachers spent more than 3 hours per week on physical education, 6.6% spent less than 1 hour per week. Likewise, 56.1% thought that it was necessary to spend more than 3 hours per week on physical education within the curriculum, and only 1.1% thought that the weekly dedication to motricity within the annual program should be less than 1 hour per week.

When comparing the time they actually spend on physical education with the time they consider necessary to develop physical education, only 2% stated that it was necessary to spend less time than they actually do, 7% spend the time they think is necessary, and 25% acknowledged that they should spend more time than they actually do. There was a significant and strong relation between the two variables (Somers $d = .604$, $p = .000$). Of those who spend more than 3 weekly hours on physical education, 94.4% considered that this amount of time is necessary. In contrast, 36.7% of those who spend between 1 and 2 hours and 80% of those who spend less than 1 hour per week declared that it is necessary to spend more time (Table 1).

Table No. 1. Contingency table. Weekly time spent on physical education and amount of weekly time considered necessary to spend on physical education.

Weekly time spent on physical education		Amount of weekly time considered necessary to spend on physical education			Total
		Less than 1 hour	Between 1 and 2 hours	3 or more hours	
Does not work on physical education	Frequency	0	2	1	
	% of the row	0%	66.7%	33.3%	100%
Less than 1 hour	Frequency	4	14	2	
	% of the row	20%	70%	10%	100%
Between 1 and 2 hours	Frequency	0	126	73	
	% of the row	0%	63%	36.7%	100%
3 or more hours	Frequency	0	7	118	
	% of the row	0%	5.6%	94.4%	100%

Concerning difficulties, 72.4% of the kindergarten teachers had difficulties working on physical education, versus 27.6% who had no difficulties to work on this area. The four difficulties most frequently identified by the kindergarten teachers for the development of physical education were: an excessive ratio of students, scarce material resources, lack of space in the educational center, and lack of teachers' training (Table 2).

Table 2. Scores of each difficulty identified for the correct development of physical education.

Difficulties to work on physical education	Percentage
Too many students	49.3%
Scarce material resources	30.7%
The center has no spaces	25.5%
Lack of teachers' training	22.9%
Insufficient time	19.8%
Scarce personal resources	19.2%

The center has spaces but their use is reserved for another educational stage	14.3%
Rigid schedule	13.8%
Students' extreme youth	10.1%
Lack of teachers' motivation	9.7%
Other difficulties	4.3%
Too few students	0.9%

Bivariate analysis yielded no significant differences in the number of difficulties perceived by teachers to develop physical education either as a function of the time they spend on this area ($p = .993$) or of the physical education courses received ($p = .538$), or of whether they consider it necessary to spend more or less time on motricity than they currently do ($p = .066$).

Examining each type of difficulty in more detail, no significant differences were observed between any of them and the number of specific courses of physical education received (Table 3). Each type of difficulty was similarly mentioned, independently of the teachers' specific physical education training.

Table 3. Bivariate relational analysis Difficulties to teach physical education

Difficulties to teach physical education	Number of specific courses in physical education		I would like to spend more time, less time, the same amount of time on physical education		Weekly time spent on physical education	
	Cramer's <i>V</i>	<i>p</i>	Cramer's <i>V</i>	<i>p</i>	Cramer's <i>V</i>	<i>p</i>
Too many students	.058	.566	.066	.472	.125	.146
Too few students	.097	.198	.085	.286	.027	.969
Students' extreme youth	.041	.745	.058	.561	.176	.013
The center has no spaces	.027	.879	.103	.156	.082	.509
The center has spaces but their use is reserved for other educational stages	.121	.079	.118	.090	.063	.709
Insufficient time	.127	.060	.122	.075	.080	.529
Scarce material resources	.106	.141	.021	.925	.082	.500
Scarce personal resources	.085	.284	.120	.082	.106	.269
Rigid schedule	.058	.555	.062	.510	.088	.446
Lack of information	.127	.062	.169	.007	.112	.223
Lack of teachers' motivation	.052	.628	.122	.074	.134	.102

Teachers who considered it necessary to spend more time than they actually do on physical education were those who perceived lack of training as a difficulty to develop motricity (33.7%). It is noteworthy that none of the teachers who would like to spend less time on physical education indicated lack of training as a difficulty (Cramer's $V = .169$, $p = .007$).

Lastly, the only argument showing significant differences in weekly time spent on physical education was the students' extreme youth (Cramer's $V = .176$, $p < .05$). This argument was offered more frequently by teachers who did not work on physical education.

Discussion

The majority of kindergarten teachers (67.9%) have scarce specific training in physical education; this reality matches that of Solis, Prieto, Nistal, and Vázquez (2017) in the kindergarten teachers of Asturias. Teachers' higher specific qualification in physical education is related to their consideration that more time is necessary to develop physical education in the center, and to more weekly time actually spent on motricity.

On another hand, one fourth of the kindergarten teachers acknowledge that it is necessary to spend more time on physical education than they actually do. However, most of the kindergarten teachers report having difficulties to perform their work in physical education.

The four difficulties most frequently mentioned by the teaching staff were the excessive number of students, the lack of material resources, the lack of spaces in the center, and the lack of teaching staff's training. Three of these difficulties—lack of facilities, materials, and training—are also the main limitations for motor practice of small children in other international studies (Bower et al., 2008; Brown et al., 2009; Cardon et al., 2008; Copeland et al., 2011; Dowda et al., 2009; Trost, Ward, & Senso, 2010). Meanwhile, the excessive number of students seems to be a difficulty only highlighted by teachers in the Spanish state (Solis et al., 2017).

It is necessary to underscore that the present study shows that none of the perceived difficulties is associated with less time spent by the teacher on physical education within the school day. In the same vein, the study of Pons and Arufe (2016) shows that three out of ten motor practices are developed in spite of not having spaces adapted to their practice.

Likewise, the perception of difficulties is not associated with the specific training received. These conclusions are ratified by those of Gregorc et al. (2012).

Ultimately, in coherence with some investigations (Copeland et al., 2011; Gregorc et al., 2012), these findings determine the need to promote specific training programs aimed at increasing kindergarten teachers' qualification in physical education as an effective strategy to increase motor experiences within the kindergarten curriculum, and thereby to promote physical activity at early ages, as various studies have noted (Alhassan et al., 2012; Arufe

Giráldez, Abelairas Gómez, Barcala Furelos, & Teixeira Costa, 2015; Brodani & Ziskova, 2015; Contell, Molina, & Martínez, 2017; Goldfield et al., 2012).

Conclusions

The present study concludes that the specific training in physical education received by teachers is directly associated with the time they spend on active learning in physical education; however, it is not significantly related to teachers' perception of difficulties to develop physical education in school.

In addition, the results of this investigation reflect that teachers who consider that it is essential to spend more time than they actually do on the development of physical education seem to be those who most need training programs, as they are also the ones who point to the lack of training as a difficulty to work on motricity. The same can be said about teachers who do not work on physical education: they indicate the students' extreme youth as a difficulty for motor development, but lack of qualification to know how to work on physical activity in such young children is intuited.

This work presents some limitations derived from the data collection technique, via the teaching staff's self-report questionnaire. The information referring to the time spent on physical education could have been controlled by direct observation of the teachers' behavior, and the number of courses received could have been confirmed by accreditative documentation. To measure teachers' qualification in physical education, we considered the number of specific courses received by them. It might be necessary to consider the quality of the training programs, which would allow us to specify the concrete characteristics that training programs of physical education should meet.

Ultimately, the present study presents important implications to increase structured motor work within the kindergarten curriculum; it orients social policies towards the need to focus efforts mainly on generating training opportunities, both theoretical and practical, to increase kindergarten teachers' qualification in physical education; and it even envisions future

research pathways that will complement the comprehension and improvement of the quality of physical education in kindergartens in the Spanish state.

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