


The educational inclusion in physical education, design and validation of the EF-IDAN2019 Questionnaire

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ABSTRACT

The processes of educational inclusion of students with disabilities in the ordinary system have had a direct impact on pedagogical practices. It is considered that future teachers specialized in physical education should have extensive knowledge in attention to diversity and physical neuroeducation. The general objective of this study is to analyse if it is possible to design and validate the EF-IDAN2019 questionnaire in university students. To respond to this objective, a research process based on the quantitative paradigm is carried out. For the validation of the instrument, we have the participation of a sample of $n = 359$ university students. The analysis of results confirms our dimensions, and, on the other hand, reduces the initial questionnaire to six dimensions, obtaining at the end a new questionnaire of 24 items with high reliability indexes (Cronbach's Alpha = .986). The factor analysis can be done because a significant result is obtained in the KMO test = .771. Bartlett's sphericity test confirms that the factorial model is adequate. The values of kurtosis and asymmetry, as well as the standard deviation, support the factorial analysis. Based on these results, it can be concluded that it is possible to design and validate the EF-IDAN2019 questionnaire in university students.

Keywords: Physical education; Educational inclusion; Attention to diversity; Neuroeducation.

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INTRODUCTION

Nowadays, pedagogical practices are increasingly gathering the processes of educational inclusion. The sum of rights of the group of people that present functional diversity, as well as the appearance of new legislations has led to profound changes in their educational attention.

Educational inclusion aims to respond to the diversity of needs presented by students, through greater participation in learning and cultural and community activities, and thus, reduce exclusion within and outside of education systems (UNESCO, 2005). The inclusion of students reaches all areas and educational subjects, however, Physical Education seems to present a very interesting context for inclusion (Alquraini and Gut, 2012, cited in Tant and Watelain, 2016).

According to Saez-Gallego, Abellán and Hernández-Martínez (2019), “due to the implementation of the inclusive school, it is necessary to evaluate the attitudes toward the inclusion of teachers and future teachers, as essential agents when it comes to achieving full educational inclusion” (p.75).

The benefits of physical activity are universal for all children, even intensifying in the case of children with disabilities. The participation of students with functional diversity in physical education sessions increases their belonging to the group-class, but also improves their physical functioning and acquires and reinforces motor skills. Despite the high rates of students with disabilities in school environments, their participation in physical activity programs is limited (Murphy and Carbone, 2008, cited in Tant and Watelain, 2016). Trying to respond to this problem requires a complete and accurate training by teachers of Physical Education.

Participation in physical education sessions is a right for all students and not participating in them cannot be excused by any kind of Specific Need for Educational Support. Precisely one of the keys to facilitate awareness about the situation of people with disabilities is to promote activities in which people without disabilities are related and learn about disability (Ocete et al., 2015).

Physical Education must have an important role for society, and for the ways in which capacity and disability are defined. Specialist teachers in this field are looking for new formulas to improve their performance in working with students with disabilities (Barber, 2016). These programs must overcome conceptions based on adaptation strategies and begin to really question how Physical Education can improve their quality of life.

To offer the most appropriate educational response to people with disabilities, there is certain knowledge that is presented as indispensable. Within this knowledge are those related to the Adapted Physical Activity. The Adapted Physical Activity can be defined as a set of interdisciplinary knowledge and is aimed at the detection and solution of individual differences in physical activity, with adaptation to the context and the environment in which they are developed. Its performance is focused on the provision of services and the acceptance of individual differences, in defence of access to an active lifestyle and sports (Pérez et al., 2012). In spite of the importance of the Adapted Physical Activity for people with disabilities, there is an undoubted lack of attention from the research in Sports Science towards this area (Pérez, 2009). Teachers complain of a lack of training to expand their knowledge of care for people with disabilities in physical education, and usually, parents do not have direct contact with physical education teachers and do not know what they do children in these classes (Santamaría, et al., 2016).

However, we can take as an example the study Adapted Didactic Unit for Physical Education in a Special Education Center of Tolsá, Tolsá and Ribas (2017), and appreciate how it is possible to adapt materials and work successfully with people with different characteristics.

As indicated by Jiménez-Monteagudo and Hernández-Álvarez (2013), you can find several research works related to teachers' perceptions of the treatment of diversity and the inclusion of students in physical education classes (Díaz del Cueto, 2009; Silva et al., 2011). Among all the information gathered in these studies is crucial to highlight the low level of proficiency on the part of teachers before the attention of students with physical or intellectual disabilities, as well as the doubts caused by the process of change from the integration paradigm to the educational inclusion.

Currently, the degree in primary education is subdivided into a list of specialties, in most of the Spanish universities these would be: specialty in Physical Education, specialty in Music Education, specialty in Special Education, specialty in Catholic Theology and its Pedagogy, specialty without specialty, specialty in Foreign Language: English and specialty in Foreign Language: French.

Although this division may vary depending on the university and the geographical area where it is located, in some cases the specialty in a foreign language appears: German, or the specialty in hearing and language. Attending this structure, Rodríguez et al. (2017), make an analysis on initial, permanent training and attitudes of teachers specialized in Physical Education in attention to diversity and inclusion. The conclusions derived from this research indicate shortcomings in the initial training of future physical education specialists around these two paradigms, as a solution to this deficit it is proposed a reinforcement of the permanent training and treating the inclusion as a transversal subject in the university curriculum of primary education degree.

In recent decades there has been an increase in neuroscientific research oriented to the field of education, which has created a new body of knowledge that helps to better understand teaching and learning processes from different perspectives. Neuroeducation is understood as a new perspective that applies knowledge about brain functioning to instruction and education. This has been possible in part thanks to the numerous advances in neuroimaging techniques, which have made it possible to study the brain in vivo (Richaud et al., 2018).

Physical activity focused on the development of cognitive abilities has not yet been widely studied. This can be mainly due to two reasons; one of them related to the scarce scientific production (developed from physical education), or the lack of greater knowledge of professionals in the area about the benefits that physical activity can have on brain activity (Maureira, 2018).

It seems relevant that teachers specialized in physical education have a basic training in neuroeducation, which will enable a greater understanding of the effects of movement in cognition, as well as it will contribute to better understand the situation of people who have functional diversity due to neurological damage. The latter will have a direct impact on the educational inclusion of these students.

There are not many investigations that have validated or extracted information through questionnaires about the notions so far described. The study Development and Validation of the Children's Attitudes Toward Integrated Physical Education-Revised (CAIPE-R) Inventory, Block (1995) could be cited as background, however, in this case the questionnaire was aimed at assessing attitudes of children without disabilities towards the inclusion of their colleagues with disabilities. Similarly, the study Questionnaire for future teachers of Secondary Education about the perceptions about attention to diversity can be seen: construction and

validation of the instrument (Colmenero and Pegalajar, 2015), again both the target population and the specific objective of this study are different from those proposed in this research. And finally, in the same line as the study presented, you can find the research Systematization of the educational demands of the professor of physical education at work with pupil with limitations on mobility to start of the application of a factorial analysis exploratory (Macías-García and González-López, 2018) whose objective is to obtain the opinion of primary school teachers about the constituent elements of a teacher training plan for primary education to work in the classroom with students with mobility limitations.

The contributions of this study for the specialized scientific literature are based on offering a new system of assessment of knowledge and perceptions of students of primary education degree with a mention in physical education about educational inclusion, attention to diversity and neuroeducation, based on the design and subsequent validation of the of the EF-IDAN2019 questionnaire to measure knowledge and perceptions on inclusion, attention to diversity and neuroeducation in the field of physical education. The general objective established is to analyse if the EF-IDAN2019 questionnaire can be designed and validated.

MATERIAL AND METHODS

Research Problem

In this research the following research problem is considered: Can a questionnaire be designed and validated to measure knowledge and perceptions about inclusion, attention to diversity and neuroeducation in the area of physical education?

Objectives

Overall objective

Can be designed and validated the questionnaire EF-IDAN2019?

Specific objectives

With this problem and general objective, the following specific objectives are established: 1.-Review the conceptual bases in educational inclusion; 2.-Analyze the different measures of attention to diversity; and finally, 3.-Show the conceptual bases in neuroeducation.

Design and participants

According to the stated objectives, the study method is defined from the research in education. For this, we can see as a reference the classification provided by Bisquerra (1989) who states that research methods can be oriented either to obtain basic knowledge, or to obtain knowledge applied to decision-making and actions for change. This research is exploratory and descriptive in nature, a quantitative methodology will be adopted. In order to carry out this study, we opted for the use of a questionnaire as a research instrument.

The selected population has been students of the first year of the primary education of the autonomous community of Andalusia. Participants include in this study provided of the University of Jaen. The type of sampling used is random for convenience. When the total population is entered into the sample size formula with a margin of error of 2.5% and a confidence level of 99% is obtained, a sample of $n = 418$ students. The questionnaire, after several absences and errors, was finally answered by 359 first-year students.

The representation by sex of the population under study is distributed in a total of 94 men and 265 women. The average age of the sample is 22 years.

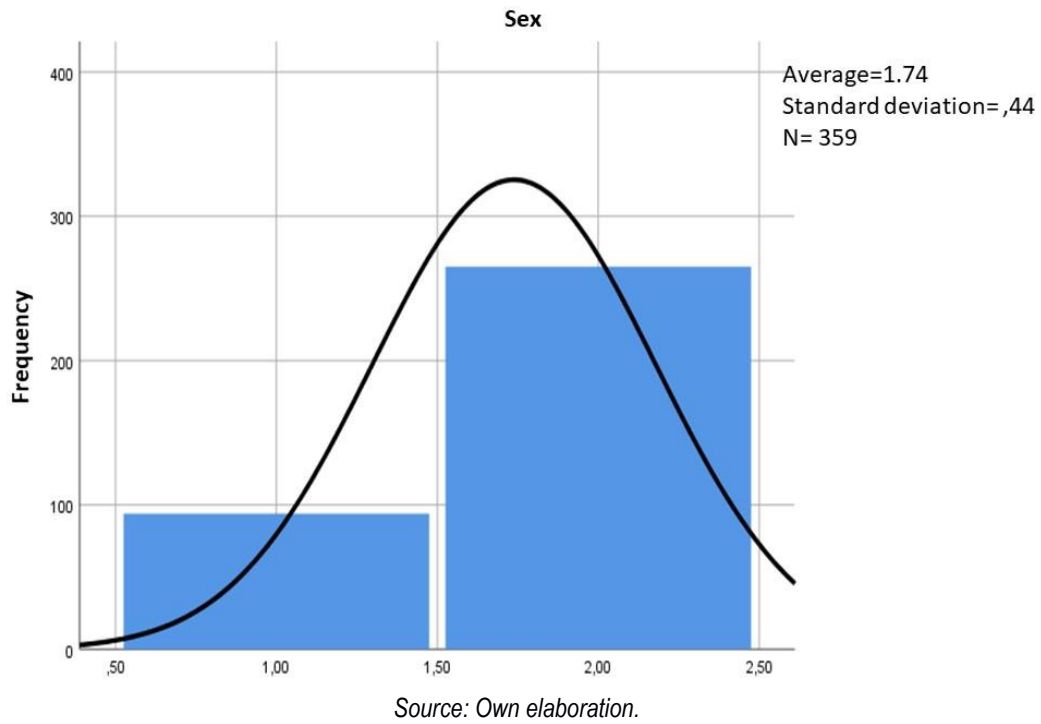


Figure 1. Representation of the sample by gender.

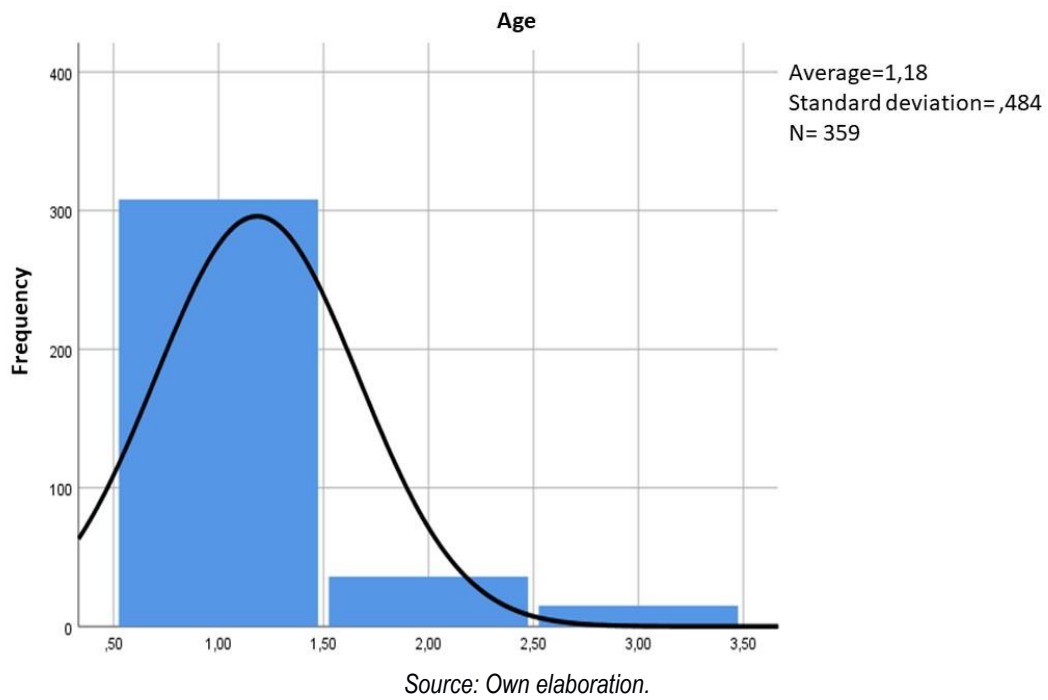


Figure 2. Representation of the sample by age.

Measures

The questionnaire has been created, through the specific objectives and dimensions considered, the operationalization table is as follows:

Table 1. Operationalization table.

Specific objectives	Dimensions	Items
1.-Review the conceptual bases in educational inclusion.	A.-Educational inclusion.	<p>A1.- Educational inclusion is the process of systematic analysis of cultures, policies and school practices to try to eliminate or minimize, through sustained initiatives of improvement and school innovation, barriers of different types that limit the presence, the student learning and participation in the school life of schoolchildren where they are enrolled, with particular attention to those most vulnerable.</p> <p>A2.-The Adapted Physical Activity is the one that is conditioned for people with limited conditions such as disability, health deficiencies or advanced age, to favor the integration of these people into a healthy lifestyle through sports practice.</p> <p>A3.-There is a latent relationship between the inclusion of students who present functional diversity in physical education classes and the methodology of adapted physical activity programs.</p> <p>A4.-Adapted physical activity is aimed only at people with motor disabilities.</p> <p>A5.-Adapted sports can be defined as competition or sports participation at all levels for people with disabilities.</p> <p>A6.-The practice of Sports and Physical Activity in an inclusive group is one in which people with disabilities will share all physical and sports activities with people without disabilities.</p> <p>A7.-The practice of Sport and Physical Activity in specific/exclusive groups, refers to the practice of persons with disabilities, performing a joint work, outside the ordinary group.</p> <p>A8.-At all times it is preferable to carry out the specific / exclusive group practice for people with disabilities.</p> <p>A9.-Adapted physical activity and adapted sports are currently mandatory content in all grade designs.</p> <p>A10.-To carry out adapted physical activity sessions it is not necessary to make curricular adaptations.</p>
2.-Analyze the different measures of attention to diversity; and finally.	B.-Measures of attention to diversity.	<p>B11.-The measures of attention to diversity in Physical Education try to bring the curriculum closer to the individual characteristics of each student, favoring the individualization of teaching.</p> <p>B12.-With the measures of attention to diversity in Physical Education what is intended is to reduce the degree of demand for students to reach the objectives.</p> <p>B13.-Within the measures of attention to diversity in Physical Education we find referred to teaching strategies and styles, groupings and organization, activities and students.</p> <p>B14.-Within the measures of attention to diversity in Physical Education, students who have temporary or permanent physical disability, serious and permanent physical disability and disabilities contraindicated for a certain type of content must be taken into account.</p>

		<p><i>B15.-Curricular adaptations are a specific type of measure of attention to diversity.</i></p> <p><i>B16.-The curricular adaptations will be carried out taking into account the considerations that appear in the medical certificates and the results of the opinion issued by the Guidance department.</i></p> <p><i>B17.-The measures of attention to diversity related to clusters are essential for the educational inclusion of students with diversity.</i></p> <p><i>B18.-Access adaptations are essential in Physical Education classes for students who have sensory or motor disabilities.</i></p> <p><i>B19.-The attention to diversity is understood as all educational actions aimed at responding to different abilities, rhythms and learning styles, motivations and interests, social, ethnic, immigration or student health situations.</i></p>
<p>3.-Show the conceptual bases in neuroeducation.</p>	<p>C.- Neuroeducation.</p>	<p><i>C20.-Neuroeducation is a line of thought that aims to combine knowledge of the brain and learning with cognitive psychology and pedagogy.</i></p> <p><i>C21.-The physical neuroeducation discipline allows to establish relations between the knowledge of neuroscience and motor activity.</i></p> <p><i>C22.-Among the different aspects studied by physical neuroeducation we find: the relationship between physical activity and the decrease in anxiety and depression, the relationship between physical exercise and self-esteem, or the improvement of the attention processes after carrying out activity physical.</i></p> <p><i>C23.-Movement, thought and behaviour are closely related.</i></p> <p><i>C24.-There is a relationship between physical activity and development of cognitive skills.</i></p> <p><i>C25.-Physical Education classes become an adequate natural environment to observe neuronal problems associated with the motor area.</i></p> <p><i>C26.-Having knowledge about the neuronal control of the movement will help the Physical Education specialists to program sessions for students that present functional diversity.</i></p> <p><i>C27.- Having knowledge about the neuronal control of the movement will help the Physical Education specialists to program sessions for students who have cerebral palsy.</i></p> <p><i>C28.-The programming of sessions in Physical Education based on the knowledge provided by neuroeducation has a positive impact on the inclusion of students.</i></p> <p><i>C29.-Training in physical neuroeducation allows teachers to better understand the situation of people with functional diversity due to brain damage.</i></p> <p><i>C30.-Training in physical neuroeducation allows teachers not to fall into neuromites associated with physical education.</i></p>

Source: Own elaboration

The dimensions considered in this study, taken from the theoretical framework and the construction of the questionnaire are: A. -Inclusion education, B.- Measures of attention to diversity, C.-Neuroeducation. Accordingly, the following independent variables are established: educational inclusion, measures of attention to diversity and neuroeducation. Moreover, the dependent variables are: knowledge and perception.

Procedures

The procedure takes shape in different stages:

- At first, the appropriate permits are requested to be able to count on the participation of university students of the Jaen University. Once the research was accepted by the university authorities, the participants had to sign an informed consent, which explained the characteristics of the study presented, as well as the possible risks and benefits.
- Secondly the questionnaire was built with an operationalization table, depending upon the independent, dependent variables and specific objectives. Three dimensions are established as mentioned previously, with a total of thirty items.
- Finally, the design of the questionnaire has been made with an operationalization table, moreover, the validation has been carried out, at the first moment of content, with an expert judgment and a pilot test, secondly, a factor analysis was carried out to validate the questionnaire in its construct.

Data Analysis

For all the data analysis procedure the software is used IBM SPSS Statistics v21. The reliability analysis was performed by calculating Cronbach's alpha, giving a score of .833, which is considered good (George and Mallery, 2003).

RESULTS

Content validity

Regarding the validity, in the first place, we proceeded to a content validity that was carried out by fifteen specialists doctor professor (Malla and Zabala, 1978) authorized to carry out this evaluation and belonging to different universities. The coefficient of competence was calculated, being $k = .9$, which shows a high level of competition (García and Fernández (2008), López (2008) and Mengual (2011)). On the one hand, after analysing the validation questionnaires some questions were readjusted, without affecting the merits of the matter. On the other hand, a pilot test was carried out to a subgroup of the sample to review comprehension difficulties, identify the questions that generated doubt, etc., the corresponding control list was used (Iraossi, 2006). The results of the pilot test were satisfactory, so the instrument was validated in its content.

Construct validity (Factor Analysis)

At this point it is essential to present a descriptive analysis of each of the items in the questionnaire. (to better understand the statistical extraction procedure, see table 2).

Table 2. Descriptive statistics.

	Descriptive statistics						
	N	Statistical Mean	Deviation Statistical	Asymmetry		Kurtosis	
				Statistical	Dev. Error	Statistical	Dev. Error
A1	359	3.7994	0.72767	-.197	.129	-0.189	.257
A2	359	4.1866	0.74836	-.801	.129	0.633	.257
A3	359	3.5265	0.84810	-.581	.129	0.525	.257
A4	359	2.3649	0.97051	.671	.129	0.261	.257
A5	359	3.5850	0.97046	-.582	.129	-0.178	.257
A6	359	3.8858	0.90052	-.512	.129	-0.039	.257
A7	359	3.5181	0.89635	-.183	.129	-0.313	.257
A8	359	2.7855	1.01454	.247	.129	-0.384	.257

A9	359	3.5850	0.94123	-.278	.129	-0.464	.257
A10	359	2.5655	1.11392	.542	.129	-0.429	.257
B11	359	3.5014	0.89653	-.343	.129	0.096	.257
B12	359	3.2451	1.01995	.002	.129	-0.585	.257
B13	359	3.6240	0.86236	-.322	.129	-0.019	.257
B14	359	4.0139	0.88585	-.488	.129	-0.648	.257
B15	359	3.9081	0.69308	-.281	.129	0.052	.257
B16	359	3.7632	0.77473	-.143	.129	0.343	.257
B17	359	3.7437	0.76666	-.238	.129	-0.243	.257
B18	359	3.9192	0.83341	-.284	.129	-0.656	.257
B19	359	3.8635	0.85924	-.584	.129	0.358	.257
C20	359	3.7799	0.71225	-.025	.129	-0.393	.257
C21	359	3.7131	0.76123	-.382	.129	0.759	.257
C22	359	3.6462	0.76603	.399	.129	-0.732	.257
C23	359	3.8022	0.85704	-.465	.129	-0.307	.257
C24	359	4.0724	0.75138	-.239	.129	-0.850	.257
C25	359	3.8719	0.83917	-.325	.129	-0.516	.257
C26	359	3.8830	0.79644	-.154	.129	-0.679	.257
C27	359	4.0501	0.79996	-.222	.129	-1.065	.257
C28	359	3.8802	0.86174	-.162	.129	-0.911	.257
C29	359	3.8719	0.97182	-.585	.129	-0.285	.257
C30	359	3.7744	0.89181	-.302	.129	-0.212	.257
N Valid (per list)	359						

Source: Own elaboration.

The values of kurtosis, give less than zero, so we do not discard any item, being the platykurtic distribution. Regarding the asymmetry, the values are less than zero, so in general we have an asymmetrically negative curve. Regarding the standard deviation, we observed little variability.

The factorial analysis technique that has been applied in this research follows the guidelines established by the following stages being exploratory (García, Alvira, Alonso and Escobar, 2015; Díaz de Rada, 2002):

1. Study of the correlation matrix: it is necessary to study the matrix of correlations to check if the data are adequate to perform a Factorial Analysis. For this, this matrix must have a certain structure. To verify this, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO coefficient) was used, in our case the value is .771, following Kaiser (1974) the value is acceptable, so the analysis is continued. In addition, Bartlett's sphericity test provides a significance of .000, for 435 degrees of freedom, and an approximate chi-square of 4969.961, so we confirm the continuity of the factorial analysis.
2. Extraction of the factors: once it was decided that the factor analysis can give good results, we proceed to the extraction of the factors. In a good extraction these values must be high (when closer to one better) in all the variables. The resulting table of communalities showed that the factors have a value greater than .606, so it is not necessary to eliminate any item from the factorial analysis. The best represented items are: A2 (.797) -The Adapted Physical Activity is the one that is conditioned for people with limited conditions such as disability, deficiencies in health or old age, to favour the integration of these people in a style of healthy life through sports practice. A8 (.799) -It is always preferable to carry out specific/exclusive group practice for people with disabilities. A10 (.798) -To

carry out adapted physical activity sessions, it is not necessary to make curricular adaptations. The worst represented items are: B17 (.590) -The measures of attention to diversity related to groupings are fundamental for the educational inclusion of students with diversity. C25 (. 558) -The Physical Education classes become an adequate natural environment to observe neuronal problems associated with the motor area.

3. Rotation of the factors: To perform the rotations there are several methods according to the optimality criterion. One of them is the Varimax Rotation that optimizes the factorial loads in such a way that loads are obtained as extreme as possible in the factors (high and low). There are rules to know the most appropriate number of factors to be conserved, for example, what is known as Kaiser's criterion (1974) that indicates that the main components whose own values are greater than unity must be conserved, although the criterion most used is to observe the percentage of total variance explained by each component or factor, and when it reaches an accumulated percentage considered high, in our case are the first 10 factors, which explain a 69,646 of the cumulative variance.

According to the results, it is decided not to eliminate any item.

Table 3. Total variance explained.

Component	Initial eigenvalues			Sum of charges to the square of the extraction			Sum of charges to the square of the rotation		
	Total	% variance	% accumulated	Total	% variance	% accumulated	Total	% variance	% accumulated
1	7.447	24.825	24.825	7.447	24.825	24.825	3.150	10.499	10.499
2	2.370	7.899	32.723	2.370	7.899	32.723	2.637	8.789	19.288
3	1.864	6.213	38.936	1.864	6.213	38.936	2.338	7.792	27.080
4	1.709	5.698	44.634	1.709	5.698	44.634	2.309	7.697	34.777
5	1.544	5.147	49.781	1.544	5.147	49.781	1.984	6.614	41.390
6	1.343	4.478	54.259	1.343	4.478	54.259	1.977	6.590	47.980
7	1.303	4.343	58.602	1.303	4.343	58.602	1.942	6.472	54.452
8	1.208	4.025	62.627	1.208	4.025	62.627	1.812	6.040	60.492
9	1.103	3.676	66.303	1.103	3.676	66.303	1.382	4.607	65.099
10	1.003	3.343	69.646	1.003	3.343	69.646	1.364	4.546	69.646
11	0.932	3.105	72.751						
12	0.875	2.915	75.666						
13	0.784	2.613	78.279						
14	0.760	2.533	80.812						
15	0.706	2.354	83.166						
16	0.666	2.219	85.385						
17	0.575	1.917	87.301						
18	0.537	1.790	89.091						
19	0.460	1.535	90.626						
20	0.434	1.447	92.074						
21	0.395	1.318	93.391						
22	0.328	1.095	94.486						
23	0.312	1.042	95.528						
24	0.286	0.952	96.480						
25	0.270	0.899	97.379						
26	0.249	0.830	98.209						
27	0.198	0.660	98.870						
28	0.140	0.468	99.337						
29	0.108	0.360	99.698						
30	0.091	0.302	100.000						

Note: Extraction method: Analysis of main components.

Source: Own elaboration

Next, the matrix of main components is calculated (See table 4).

Table 4. Matrix of rotated components.

	Component									
	1	2	3	4	5	6	7	8	9	10
A1	.219	.082	.081	.245	-.063	.163	-.006	.680	-.121	.034
A2	.125	.046	.165	.832	.110	.145	-.110	.070	-.025	.095
A3	.039	-.015	.130	-.025	.039	.808	.022	.043	.076	-.030
A4	-.020	-.064	-.092	-.053	-.128	-.109	.801	.164	.085	.109
A5	-.084	-.096	.250	.366	-.097	.150	.424	.203	-.368	-.287
A6	.196	.072	.177	.720	.188	-.063	.150	.104	.056	-.106
A7	.139	.362	.052	.469	-.147	.420	.014	.200	-.053	.183
A8	.004	.092	-.043	-.021	-.062	.072	-.013	-.018	.881	.035
A9	.133	.095	.050	.250	.251	.418	.403	-.051	.397	-.235
A10	-.199	-.136	.034	.017	.024	-.013	.236	-.049	.047	.823
B11	.178	-.260	.442	.266	.116	.387	-.057	.327	.292	-.063
B12	-.018	.106	.080	.076	-.040	.293	.733	-.080	-.141	.257
B13	.353	.269	-.234	.286	.138	.494	.210	.060	-.003	.118
B14	.675	.179	.328	.249	-.048	.126	.030	.078	-.098	-.156
B15	.635	.181	-.039	.054	.263	.141	.014	.055	-.055	.428
B16	.227	.082	.522	.054	.046	.390	.112	-.049	-.060	.056
B17	.626	.064	.243	.139	.252	.053	-.025	.158	.062	-.141
B18	.281	.458	-.119	.090	.363	.106	.097	.427	-.138	.055
B19	.796	.180	-.010	.068	-.044	.061	-.047	.226	.099	-.101
C20	.097	.248	.111	-.142	.046	-.079	.426	.628	.087	-.224
C21	.355	-.117	.352	.142	.372	-.106	-.015	.486	.080	.004
C22	.024	.694	.302	.085	-.022	.039	.092	.338	.178	.117
C23	.179	-.027	.188	.147	.774	-.040	-.047	-.046	.053	.119
C24	-.036	.330	.010	.040	.678	.331	-.225	.122	-.099	-.068
C25	-.018	.328	.482	.178	.382	.037	.026	.090	-.117	-.128
C26	.346	.601	.252	-.029	.115	.058	-.091	.110	-.106	-.136
C27	.339	.422	.138	.423	.358	-.239	.031	-.119	-.060	-.040
C28	.261	.737	.050	.107	.094	.045	.015	-.102	.172	-.129
C29	.547	.275	.524	.157	.066	.036	.037	.005	.057	-.101
C30	.135	.204	.781	.203	.112	-.016	-.054	.158	-.044	.078

Note: Extraction method: analysis of main components. Rotation method: Varimax with Kaiser standardization. a. The rotation has converged in 14 iterations.

Source: Own elaboration

We prefer to use the original component matrix for the assignment of items to each factor, since the varimax rotation gives a very dispersed result, next we see the table 5 of components.

Table 5. Component matrix.

	Component									
	1	2	3	4	5	6	7	8	9	10
A1	.487	.193	-.037	-.261	-.090	-.137	-.071	-.353	-.030	.358
A2	.548	.086	-.430	.207	.116	-.135	-.222	.192	-.216	.310
A3	.278	.334	-.071	.394	-.343	.274	-.137	-.289	.160	-.115
A4	-.051	.656	.243	-.278	.120	-.152	.271	.119	-.109	-.158

A5	.263	.463	-.336	-.364	.124	.107	-.272	-.048	-.165	-.154
A6	.574	.097	-.292	-.029	.120	-.120	-.041	.274	-.372	.102
A7	.533	.299	.046	.189	.030	.015	-.339	.004	.057	.343
A8	.023	.047	.266	.287	-.476	.169	.427	.347	-.142	.254
A9	.442	.355	.056	.281	-.222	.202	.136	.141	-.334	-.251
A10	-.177	.399	-.074	.295	.364	-.253	.354	.083	.365	.232
B11	.488	.177	-.437	.067	-.438	.080	.205	-.103	.011	.108
B12	.174	.720	.119	.067	.274	-.007	.001	.096	.144	-.259
B13	.510	.303	.251	.381	-.007	-.165	-.207	-.115	-.114	-.039
B14	.707	-.062	-.021	-.165	-.205	-.198	-.217	.126	.131	-.154
B15	.527	-.052	.214	.279	.085	-.480	.086	-.102	.240	-.050
B16	.478	.174	-.189	.080	-.093	.153	-.030	.035	.369	-.197
B17	.650	-.189	-.033	-.065	-.207	-.211	.089	-.019	-.013	-.174
B18	.587	-.011	.332	-.007	.247	-.071	.036	-.348	-.132	.082
B19	.592	-.152	.283	-.112	-.361	-.380	-.081	-.010	.022	-.040
C20	.363	.256	.312	-.525	-.035	.140	.281	-.221	-.158	.022
C21	.558	-.111	-.250	-.223	-.073	-.181	.399	-.198	-.046	.056
C22	.554	.077	.341	-.133	.144	.335	.111	.100	.153	.353
C23	.416	-.270	-.245	.301	.262	-.081	.415	-.092	-.123	-.210
C24	.439	-.260	.005	.372	.238	.298	.057	-.434	-.146	-.062
C25	.539	-.120	-.182	-.077	.276	.351	.085	-.006	.021	-.083
C26	.598	-.264	.292	-.121	.075	.183	-.130	-.016	.165	-.042
C27	.595	-.278	.039	.026	.353	-.103	-.027	.299	-.182	-.070
C28	.528	-.189	.472	.099	.079	.233	-.111	.266	-.044	.004
C29	.711	-.135	-.026	-.140	-.129	-.002	.013	.251	.217	-.156
C30	.604	-.080	-.338	-.208	.102	.214	.142	.152	.351	.091

Note: Extraction method: analysis of main components. to. 10 extracted components.
Source: Own elaboration.

- Study of factorial scores: the analysis of variance explained and accumulated is shown in table 1, as well as the determination of factors and distribution of items according to the highest level of saturation by factors (greater than 3 items).

Table 6. Analysis of explained and accumulated variance.

Factor	Denomination	% of cumulate variance	Items integrated in each factor of the questionnaire
I	A(Educational inclusion)	24.825 %	A1, A2, A6, A7, A9
	B (Measures of attention to diversity)		B11, B13, B14, B15, B16, B17, B18, B19
	C (Neuroeducation)		C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30
II	B (Measures of attention to diversity)	32.723 %	B15
	C (Neuroeducation)		C23, C24, C26, C27, C28

Note: Results of the analysis of variance explained and accumulated, as well as determination of factors and distribution of items.
Source: Own elaboration.

The Cronbach's alpha has been calculated for both factors (the rest have been eliminated by having a very low number of items, less than three): Factor 1: .986 (24 items), "excellent" rating. Factor 2: .733 (6 items, which are also present in factor 1), "acceptable" rating. We take factor 1, which has a higher reliability than the original questionnaire itself, achieving a final questionnaire of 24 items, reducing 6 items.

This research has been conducted in a population of 359 first-year students of primary education, with a total of 418 subjects in the 2018-2019 academic year, showing absences due to illness and not participation in the trial. The questionnaire has been built with an operationalization table, based on specific and detailed objectives, and has been dimensioned, according to the theoretical framework, in three dimensions: A.- Educational inclusion, B.-Measures of attention to diversity, C.-Neuroeducation. The objective of this research is to design and validate a questionnaire, for the validation has been used to validate content that was satisfactory and construct validation, through exploratory factor analysis. The result of this analysis on the one hand confirms our dimensions, and on the other hand it reduces the questionnaire in six elements, obtaining a reliability according to Cronbach's alpha of excellent, so it remains valuable in its construction.

DICUSSION

The design and validation of the EF-IDAN2019 questionnaire has been carried out for a population of the first course degree of an Andalusian University (Jaen), in the future investigation it would be acceptable to carry out this validation with second, third and fourth course students, for correlate the data, in the same way a validation study will be carried out to confirm the factors through a confirmatory factorial analysis, applying the questionnaire to the university population of primary education, obtaining in this way results on the knowledge and perceptions that students have about the relationship between neuroeducation, educational inclusion and measures of attention to diversity in the area of physical education.

Studies that report on the experiences of students with disabilities in relation to their peers show how inclusion is not always successful (Block & Obrusnikova, 2007). For this reason, it is necessary to generate new instruments capable of measuring how is the educational inclusion of students, as well as the preparation of future teachers in attention to diversity. Some previous research shows how it is possible to validate instruments related to the educational inclusion of students with disabilities in the area of physical education through the use of exploratory and confirmatory factorial analysis (Vaillo, et al., (2016).

This study is not exempt from limitations, the main and most outstanding is the type of employee sample. When choosing a random sampling for convenience, the diversification of the population included in the sample is not very good, so this study can be taken as a pilot test. Once observed that the results are positive in future investigations, it is possible to expand and choose more representative and diverse samples.

This study offers a quantitative measurement instrument that allows assessing the knowledge and perceptions of future teachers on educational inclusion, attention to diversity and physical neuroeducation. Some previous research calls for the creation of this type of tools, which also allow discriminating between the training received in educational inclusion in general and received for educational inclusion in the area of physical education (Chandler & Greene, 1995).

CONCLUSION

The design and validation of the EF-IDAN2019 questionnaire aims to measure the knowledge and perceptions about inclusion, attention to diversity and neuroeducation in the field of physical education that

our university students have. To achieve this goal, we proceed to design a questionnaire through an operationalization table that relates the specific objectives, variables and dimensions with the items of the questionnaire. A reliability analysis is performed giving a good result, according to the Cronbach's alpha. Validation of the questionnaire is carried out with exploratory factor analysis, which not only confirms our study dimensions, also reduces the initial questionnaire of 30 items to another of 24 items with a higher reliability index. In future researches the validation of the construct will be carried out with the rest of the university levels, a confirmatory factorial analysis will be carried out and it will be applied in the research subjects to obtain the first results about knowledge and perception of the physical education in relation to the inclusive education measures of attention to diversity and neuroeducation.

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ANNEXED 1. EF-IDN 2019 QUESTIONNAIRE

	Respuestas				
	Muy en desacuerdo	Desacuer- do	Indifere- nte	De acuerdo	Muy de acuerdo
A1.- La inclusión educativa es el proceso de análisis sistemático de las culturas, las políticas y las prácticas escolares para tratar eliminar o minimizar, a través de iniciativas sostenidas de mejora e innovación escolar, las barreras de distinto tipo que limitan la presencia, el aprendizaje y la participación del alumnado en la vida escolar de los centros donde son escolarizados, con particular atención a aquellos más vulnerables.	1	2	3	4	5
A2.-La Actividad Física Adaptada es la que se acondiciona para personas con condiciones limitadas como la discapacidad, las deficiencias en la salud o la edad avanzada, para favorecer la integración de estas personas en un estilo de vida saludable a través de la práctica deportiva.	1	2	3	4	5
A6.-La práctica del Deporte y de la Actividad Física en grupo inclusivo es aquella en la cual las personas con discapacidad compartirán todas las actividades físico-deportivas con las personas sin discapacidad.	1	2	3	4	5
A7.-La práctica de Deporte y de Actividad Física en grupos específicos/exclusivos, hace referencia a la práctica de las personas con discapacidad, realizando un trabajo conjunto, al margen del grupo ordinario.	1	2	3	4	5

	Respuestas				
	Muy en desacuerdo	Desacuer- do	Indifere- nte	De acuerdo	Muy de acuerdo
A9.-La actividad física adaptada y los deportes adaptados son actualmente un contenido obligatorio en todos los diseños de grado.	1	2	3	4	5
B11.-Las medidas de atención a la diversidad en Educación Física tratan de acercar el currículo a las características individuales de cada alumno, favoreciendo la individualización de la enseñanza.	1	2	3	4	5
B13.-Dentro de las medidas de atención a la diversidad en Educación Física encontramos referidas a las estrategias y los estilos de enseñanza, a los agrupamientos y la organización, a las actividades y al alumnado.	1	2	3	4	5
B14.-Dentro de las medidas de atención a la diversidad en Educación Física se debe de tener en cuenta al alumnado que presenta discapacidad física transitoria o permanente, discapacidad física grave y permanente y discapacidades contraindicadas para un determinado tipo de contenidos.	1	2	3	4	5
B15.-Las adaptaciones curriculares son un tipo específico de medida de atención a la diversidad.	1	2	3	4	5
B16.-Las adaptaciones curriculares se llevarán a cabo teniendo en cuenta las consideraciones que aparecen en los certificados médicos y los	1	2	3	4	5

	Respuestas				
	Muy en desacuerdo	Desacuerdo	Indiferente	De acuerdo	Muy de acuerdo
resultados del dictamen emitido por el departamento de Orientación.					
B17.-Las medidas de atención a la diversidad relacionadas con los agrupamientos resultan fundamentales para la inclusión educativa del alumnado con diversidad.	1	2	3	4	5
B18.-Las adaptaciones de acceso resultan fundamentales en las clases de Educación Física para el alumnado que presenta discapacidad sensorial o motórica.	1	2	3	4	5
B19.-La atención a la diversidad se entiende como todas las actuaciones educativas dirigidas a dar respuesta a las diferentes capacidades, ritmos y estilos de aprendizaje, motivaciones e intereses, situaciones sociales, étnicas, de inmigración o de salud del alumnado	1	2	3	4	5
B20.-La neuroeducación es una línea de pensamiento que tiene por objeto unir los conocimientos del cerebro y el aprendizaje con la psicología cognitiva y la pedagogía.	1	2	3	4	5
C21.-La disciplina neuroeducación física permite establecer relaciones entre los conocimientos de la neurociencia y la actividad motriz.	1	2	3	4	5
C22.-Entre los diferentes aspectos que estudia la neuroeducación física encontramos: la relación	1	2	3	4	5

	Respuestas				
	Muy en desacuerdo	Desacuerdo	Indiferente	De acuerdo	Muy de acuerdo
entre actividad física y la disminución de la ansiedad y la depresión, la relación entre ejercicio físico y autoestima, o la mejora de los procesos atencionales tras la realización de actividad física.					
C23.-Movimiento, pensamiento y conducta están íntimamente relacionados.	1	2	3	4	5
C24.-Existe relación entre actividad física y desarrollo de habilidades cognitivas.	1	2	3	4	5
C25.-Las clases de Educación Física se convierten en un entorno natural adecuado para observar problemas neuronales asociados al área motriz.	1	2	3	4	5
C26.-Tener conocimientos sobre el control neuronal del movimiento ayudará a los maestros/as especialistas de Educación Física a programar sesiones para alumnado que presenta diversidad funcional.	1	2	3	4	5
C27.- Tener conocimientos sobre el control neuronal del movimiento ayudará a los maestros/as especialistas de Educación Física a programar sesiones para alumnado que presenta parálisis cerebral.	1	2	3	4	5
C28.-La programación de sesiones en Educación Física con base en los conocimientos aportados por la neuroeducación tiene una repercusión positiva en la inclusión del alumnado.	1	2	3	4	5

	Respuestas				
	Muy en desacuerdo	Desacuer- do	Indifere- nte	De acuerdo	Muy de acuerdo
C29.-La formación en neuroeducación física permite a los docentes comprender mejor la situación de las personas con diversidad funcional por daños cerebrales.	1	2	3	4	5
C30.-La formación en neuroeducación física permite a los docentes no caer en neuromitos asociados a la educación física.	1	2	3	4	5