Reliability and feasibility of an evaluation tool of teacher effectiveness and the quality of physical education sessions

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ABSTRACT

The need to ensure quality physical education has motivated the development of a reliable method to evaluate physical education sessions, capable of detecting areas of improvement, thus facilitating the continuous growth of the teaching process. The main aim of the present study is to design a feasible and reliable evaluation instrument for physical education sessions, and to determine its reliability and feasibility with a group of practicing physical education teachers. Two evaluations of the same session (videotaped) were conducted to determine whether the instrument was reliable and feasible (n = 20), 9 women and 11 men, leaving 2 weeks between the first and the second evaluation. One-way analysis of variance (ANOVA) and intraclass correlation coefficient (ICC) were performed. The total score of the evaluation instrument shows an ICC of 0.953, (95%CI 0.881; 0.982), with a p-value \leq .001. When comparing the responses of teachers from different educational levels (primary, secondary, and university), no significant differences were found between responses to any of the items or in the total score on either occasion. Total score in the test was (69.3 mean, [14.0 SD]), p-value = .881; and (66.2, [13.9]) p-value = .943 in the retest. In conclusion, the present evaluation instrument is feasible and reliable for the evaluation of physical education sessions. **Keywords**: Numerical observational scale; Teacher evaluation; Primary education; Secondary education; University education.

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INTRODUCTION

Teacher effectiveness in physical education and understanding that the educational system needs to provide quality physical education converged and resulted in the need to find a feasible and reliable method to assess teacher effectiveness in physical education. For this reason, researchers in the field called for the need to broaden science in physical education teacher effectiveness and physical educators' perceptions of effective teaching (Dyson, M., & Plunkett, 2014; Kyrgiridis, Derri, Emmanouilidou, Chlapoutaki, & Kioumourtzoglou, 2014; Lindsay, 2014; Mercier, K., & Doolittle, 2013; Metzler, 2014; J. Rink, 2014; J. E. Rink, 2013; Ward, 2013).

Quality physical education requires an adequate infrastructure to ensure the students' opportunity to learn, meaningful content, and appropriate pedagogical practices, including good classroom management and assessment of the students, the session and the teaching task (Fernández-Rivas & Espada-Mateos, 2019; National Association for Sport and Physical Education (NASPE), 2007; Navarro-Patón, Lago-Ballesteros, Basanta-Camiño, & Arufe-Giraldez, 2019). Likewise, quality physical education requires appropriate methods for assessing student learning and teacher effectiveness in physical education; Moreover, it also needs clearly defining objectives related to student outcomes in physical education (Dyson, M., & Plunkett, 2014; Kyrgiridis et al., 2014; Mercier, K., & Doolittle, 2013; Metzler, 2014; J. Rink, 2014; J. E. Rink, 2013; Ward, 2013). From a formative perspective, evaluation is a process that aims to improve the teaching-learning process, with a triple purpose: to improve student learning, to improve teaching practice, and to introduce improvements in the teaching-learning process during the same process, be it a didactic unit, a term, or an academic year (González Palacio, Chaverra Fernández, Bustamante Castaño, & Toro Suaza, 2020; López Pastor & Pérez Pueyo, 2017).

The evaluation instruments that have been used in recent years have become obsolete and there is a need to reformulate and simplify the evaluation instruments to adapt them to the characteristics of the current physical education sessions: high ratios, complex methodologies with a large number of interactions and the importance of feedback and formative assessment as a pillar of learning. Investigating teacher effectiveness in physical education using a reliable observation instrument benefits the discipline of physical education and, in addition, results in the development of active, and therefore healthier, lifelong citizens (Burgueño et al., 2019; Caracuel, Padial, Torres, & Cepero, 2020; Edufisaludable, 2021).

Effective teaching was related to features such as teacher preparation, lesson planning, content application, classroom organization and management, teaching strategies, positive learning environment, class control and discipline, teacher flexibility, communication skills, teacher feedback, and evaluation (Fernández, Hortigüela, & Pérez, 2018). To assess these characteristics in a physical education session, a wide range of evaluation instruments can be used, among which the following can be highlighted: checklists, verbal observation scales, numerical scales, descriptive scales or rubrics, graphic scales, individual monitoring sheets, group monitoring sheets, questionnaires, student's notebook, teacher's notebook, etc. (Hamodi, López Pastor, & López Pastor, 2015).

Currently, physical education seeks to promote the active participation of students, encouraging their autonomy, decision-making, creativity, and a high level of motor engagement during the sessions. It also seeks to give the teacher a reflective role in the teaching-learning process and encourages self-evaluation and peer evaluation, as well as heteroevaluation by the students, which lead to the continuous improvement of the teaching-learning process (González Palacio et al., 2020).

Self-evaluation is the evaluation carried out by the person themselves and refers to both the student and the teacher (García Carrillo, 2016). Self-evaluation is a fundamental element in the training process, through which teachers work on autonomy, criticism, and reflection to review, assess and pass judgment on their actions. As teachers, continuous training, reflection, and self-criticism, among others, are fundamental aspects to guarantee the quality of the teaching-learning process. Peer evaluation or co-evaluation is the joint evaluation where the development of peers is assessed, and offers the opportunity to get to know one's own potential, as well as giving room for improvement (Borjas, 2011).

This study focuses on improving the teaching practice by developing an evaluation instrument for physical education sessions, from which teachers can identify strengths and areas for improvement. The main aim of the present study is to design a feasible and reliable evaluation instrument for physical education sessions.

MATERIAL AND METHODS

Within the framework of the compulsory subject of Physical Education and Healthy Habits, in the primary education degree of the Balearic Islands University, during the 2020-2021 school year, a teaching innovation project was carried out to design a feasible and reliable evaluation instrument for physical education sessions.

Participants

For the design, and to assure the feasibility and reliability of this evaluation instrument, 56 students and 23 teachers and professors participated. In the first phase of the design of the evaluation instrument, the sample consisted of 56 third-year students of the University of the Balearic Islands. The students were between 21 and 40 years old, 40 (71.4%) were women and 16 (28.6%) men. All the students lived in Mallorca, Spain, and attended the face-to-face sessions of the course every fortnight. Inclusion criteria were that the students had to be enrolled in the Physical Education and Healthy Habits subject, and to be taking the classroom-based itinerary.

In the second phase of the design, the sample consisted of a group of 3 external experts. One expert was a primary school physical education teacher, the other was a secondary school physical education teacher and the third was a university physical education teacher, two men, and one woman, respectively.

In the third phase, the sample consisted of a group of 20 active physical education teachers, 8 from primary education, 6 from secondary education, and 6 from university, of which 9 (45%) were women and 11 (55%) men. All teachers lived in Mallorca, Spain. Teachers were selected from a list of teachers collaborating with the university department of pedagogy and specific didactics. The inclusion criteria where they had to be active workers at the time of the assessments, and they had to wish to participate in this study voluntarily (See Figure 1. Flow chart).

Measures

To carry out this innovation project, the university students were previously informed of the characteristics of the project and its relationship with the subject. The practical sessions of the subject were designed to be teaching simulations. In working groups, the students played the role of teachers, while the rest of the students simulated being primary school pupils.

The first phase - design: In each practical session of the subject, a working group evaluated the session of the group that was the speaker, following the numerical observation scale designed by the teachers, based on a literature review. Once the observation scale had been completed, the evaluation form was sent to the

teachers of the subject. The teacher effectiveness evaluation instrument included two questions for students to answer: "Did you miss any item to evaluate the session? If so, please indicate which one" and "Did you find any item not relevant to evaluate the session? If so, please indicate which one". Based on the students' responses, the instrument was revised again to adapt it better to the needs and characteristics of the evaluation of physical education. The 56 students used the evaluation instrument a total of 76 times during the course.

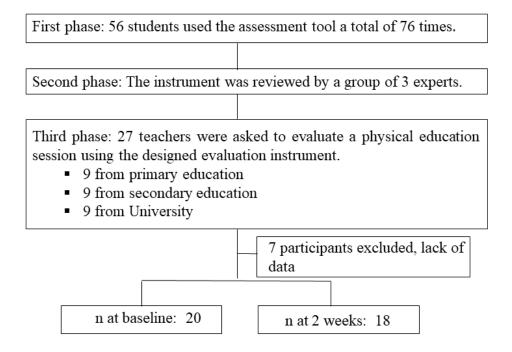


Figure 1. Flow of participants in the design and reliability of the assessment tool for physical education sessions.

The second phase - design: After reviewing the students' comments and making the relevant adaptations, as well as a second literature review, the evaluation instrument was sent to a group of 3 external experts, who evaluated the concreteness, appropriateness, and comprehension of each item on a scale of 1 to 3, where 1 was inadequate; 2 was adequate, and 3 was highly satisfactory. Based on the feedback from the group of experts, changes were incorporated into the evaluation instrument.

The third phase – feasibility and reliability: Once the final version of the evaluation instrument was developed, a group of primary, secondary, and university teachers were sent a recording of a primary school physical education session and the evaluation instrument so that they could view the recording of the session and evaluate it using the instrument. After 2 weeks, the group of teachers viewed the same session again and evaluated it using the evaluation instrument.

Procedures

Before the start of the course, a literature review was carried out on which the design of the evaluation instrument for the physical education sessions was based (Cano García, Pons Seguí, & Lluch Molins, 2018; Danielson, 2014; Villarroel & Bruna, 2019), including the Society of Health and Physical Educators of America (SHAPE) recommendations for effective physical education (SHAPE America — Society of Health and Physical Educators, 2016) and the recommendations of the National Association for Sport and Physical

Education (NASPE) (National Association for Sport and Physical Education (NASPE), 2007), which sets standards for quality physical education programs. In addition to the main recommendations of these bodies, other aspects considered relevant were taken into account, such as the inclusion of a specific item to assess co-education during the session (Sánchez Torrejón & Barea Villalba, 2019). The evaluation instrument was a numerical observation scale, consisting of 24 items and 5 categories: 1: Unsatisfactory, unacceptable, does not meet standards, needs revision; 2: Inadequate, below average, needs improvement, underdeveloped; 3: Good, satisfactory, basic, meets requirements; 4: Very good, above average, competent; 5: Exemplary, clearly exceeds standards, mastery (first phase).

The instrument also includes a section for free observations, where teachers can make any annotation they consider appropriate. The instrument was designed considering the evaluation of 3 main axes: the management of spaces, materials, and groupings; the tasks; and the teaching intervention. In addition to the relevance, efficiency, and effectiveness of the instrument to evaluate the physical education sessions, another aspect that was given special importance during the design was the convenience of the instrument to be applied during the sessions, so it had to be brief, collect the information visually, and be easy to fill in (first phase).

Analysis

The first and second phases of the study were used to design the evaluation instrument, while the third phase was used to implement the evaluation instrument and analyse its reliability and feasibility.

Characteristics of the study participants during the third phase were presented as absolute numbers (percentages) for categorical variables.

Differences between the first and second evaluations from the teachers' group were presented as mean and standard deviations (SD). One-way analysis of variance (ANOVA) was used to assess differences between the first and second evaluation across categories of education level (primary, secondary, and university). For the test reliability and feasibility, the intraclass correlation coefficient (ICC) was calculated between test and retest results (third phase). The interpretation of ICC values was based on standardized guidelines, in which a value less than 0.5 indicates poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability, and values greater than 0.90 indicate excellent reliability (Altman & Bland, 1983; Muntaner-Mas, Martinez-Nicolas, Quesada, Cadenas-Sanchez, & Ortega, 2021). All analyses were conducted with the Stata v13.0. program and SPSS v24 program. All *p*-values < .05 were deemed statistically significant.

RESULTS

The main result of this research is the reliability and feasibility of the evaluation instrument for evaluating physical education sessions, being reliable for teachers to use it at all 3 levels of education: primary education, secondary education, and university. As a result of the third phase of the present study, in which a group of teachers from the 3 educational levels used the evaluation instrument on 2 occasions, it was detected that in some cases, teachers found it difficult to evaluate some aspects of the session, be cause they could not observe them accurately. For this reason, it was decided to incorporate a sixth response option to evaluate each item. In addition to a rating on a scale of 1 to 5, where 1 was "unsatisfactory" and 5 was "exemplary", a "not applicable" option was included for those situations where, due to the nature of the session, the item could not be observed. An example of this case would be item 3 "Manages material during the session to maximize practice time" if, during the session being assessed, the teacher does not use any

material. The instrument is presented below in English (see Table 1), in addition to including the instrument translated into Spanish and Catalan (see Annexes 1 and 2).

Table 1. Numerical observation scale for the evaluation of physical education sessions.

| EVALUATION OF THE TEACHING PROCESS IN PHYSICAL EDUCATION | |
|---|------|
| *1. Unsatisfactory, unacceptable, does not meet standards, needs revision. | Num. |
| 2. Inadequate, below average, needs improvement, underdeveloped. | |
| 3. Good, satisfactory, basic, meets requirements. | |
| 4. Very good, above average, competent. | |
| 5. Exemplary, clearly exceeds standards, mastery. | |
| NA. Not applicable: For situations where, due to the nature of the session, the item cannot be observed. | |
| SPACES, MATERIALS AND GROUPINGS | |
| 1. Limits unnecessary shifts between tasks by favouring quick transitions. | |
| 2. Prepares the material and its distribution in advance of the session and with efficiency criteria. | |
| 3. Manages material during the session to maximise practice time. | |
| 4. Groups and organises the students so that they are always active, and no one is standing still. | |
| TASKS | |
| 5. Adequately schedules the number of tasks and the time devoted to each one in order to achieve the | |
| learning objectives, contents and key competences. | |
| 6. Designs tasks to develop motor competence. | |
| 7. Designs tasks to encourage maximum participation of all learners and motor engagement time (equal to or greater than 50% of the session). | |
| 8. Ensures the practical participation of all learners, irrespective of their level of motor competence. | |
| 9. Assigns tasks to students who cannot perform the practical session (injuries, inappropriate | |
| clothing, etc.). | |
| 10. Ensures the safety of students in all tasks. | |
| INTERVENTION | |
| 11. Explains the objectives of the session at the beginning and relates them to previous learning. They | |
| are worked on through the 3 areas: cognitive, psychomotor and affective. | |
| 12. Communicates clearly, provides sufficient and well-structured information. | |
| 13. Exemplifies and resolves doubts before starting the task. | |
| 14. Captures students' attention and develops listening routines. | |
| 15. Shows mastery of the content taught. | |
| 16. Gives feedback that motivates learners. | |
| 17. Moves around the space to observe, listen, give feedback, resolve doubts, etc. | |
| 18. Adapts to unforeseen events, changing situations and students' needs. | |
| 19. Listens to the students and creates a climate of trust that favours communication. | |
| 20. Manages time efficiently throughout the session, devoting sufficient time to each activity and | |
| following the timetable. | |
| 21. Takes into account co-education throughout the session: language, contents and methodologies. | |
| 22. Records aspects of the session for learner evaluation . | |
| 23. Records aspects of the session for the evaluation of the session . | |
| 24. Concludes the session with a group reflection , giving feedback and motivating the | |
| learners. | |
| | _ |

Twenty-seven participants were included in the third phase for field-test reliability and feasibility. A total of 7 participants were excluded from the test and retest, due to the lack of data, and 2 participants were lost to follow-up in the retest. Therefore, a total of 20 participants, 11 men, and 9 women were included in the analysis (phase 3). Descriptive characteristics of the participants are shown in Table 2.

Table 2. Characteristics of the teachers who carried out the evaluation in the third phase (n = 20).

| Characteristics | | Number (%) |
|-------------------|---------------------|------------|
| Educational level | Primary education | 8 (40) |
| | Secondary education | 6 (30) |
| | University | 6 (30) |
| Sex | Men | 11 (55) |
| | Women | 9 (45) |

Note: Values are number (percentage) for categorical variables.

Table 3 shows a comparison of test-retest responses, item by item, to determine the reliability of the instrument (third phase). Most of the ICCs were greater than 0.7, indicating moderate-good reliability, and 6 of the 24 items had an ICC greater than 0.90 indicating excellent reliability. All items except 1 showed a significant correlation in the test-retest. Furthermore, the total score of the evaluation instrument had an ICC of 0.953, (95% CI 0.881; 0.982), $p \le .001$, indicating excellent reliability of the instrument.

Table 3. Item-by-item reliability measured by comparing test and retest responses.

| | Total n | ICC | (95% CI) | <i>p</i> -value |
|---------|---------|-------|-----------------|-----------------|
| Item 1 | 18 | 0.864 | (0.678; 0.947) | <.001 |
| Item 2 | 18 | 0.869 | (0.689; 0.948) | <.001 |
| Item 3 | 18 | 0.939 | (0.843; 0.977) | <.001 |
| Item 4 | 18 | 0.851 | (0.650; 0.941) | <.001 |
| Item 5 | 18 | 0.792 | (0.526; 0.917) | <.001 |
| Item 6 | 18 | 0.922 | (0.806; 0.970) | <.001 |
| Item 7 | 18 | 0.874 | (0.700; 0.951) | <.001 |
| Item 8 | 18 | 0.752 | (0.436; 0.900) | <.001 |
| Item 9 | 18 | 0.029 | (-0.471; 0.491) | .456 |
| Item 10 | 18 | 0.927 | (0.816; 0.972) | <.001 |
| Item 11 | 18 | 0.864 | (0.675; 0.947) | <.001 |
| Item 12 | 18 | 0.645 | (0.262; 0.851) | .002 |
| Item 13 | 18 | 0.702 | (0.371; 0.876) | <.001 |
| Item 14 | 18 | 0.903 | (0.759; 0.963) | <.001 |
| Item 15 | 18 | 0.901 | (0.757; 0.962) | <.001 |
| Item 16 | 18 | 0.933 | (0.829; 0.974) | <.001 |
| Item 17 | 18 | 0.807 | (0.556; 0.923) | <.001 |
| Item 18 | 18 | 0.818 | (0.551; 0.933) | <.001 |
| Item 19 | 18 | 0.788 | (0.523; 0.914) | <.001 |
| Item 20 | 18 | 0.831 | (0.583; 0.935) | <.001 |
| Item 21 | 18 | 0.557 | (0.122; 0.810) | .008 |
| Item 22 | 18 | 0.779 | (0.497; 0.912) | <.001 |
| Item 23 | 18 | 0.779 | (0.497; 0.912) | <.001 |
| Item 24 | 18 | 0.458 | (-0.028; 0.765) | .032 |
| Total | 18 | 0.953 | (0.881; 0.982) | <.001 |

The values show the ICC (95% CIs), model two-way mixed and single measures. These represent the correlation between test and retest responses, analysed item-by-item and the total score. Analyses included only completers. Abbreviations: ICC: intraclass correlation coefficient; CI: confidence interval.

Table 4 shows a comparison of teachers, according to the educational level at which they teach (primary, secondary, and university), concerning to the answers given to each item in the test and retest (third phase). No significant differences were found between the teachers' responses to any of the items or in the total score on either occasion. Total score in the test was (69.3 mean, [14.0 SD]), p-value = .881; and (66.2, [13.9]) p-value = .943 in the retest.

Table 4. Test and re-test results across categories of education level.

| | Test | | | Retest | | |
|---------|---------|-------------|-----------------|---------|-------------|-----------------|
| | Total n | Mean (SD) | <i>p</i> -value | Total n | Mean (SD) | <i>p</i> -value |
| Item 1 | 20 | 3.10 (0.97) | .584 | 18 | 3.17 (1.04) | .617 |
| Item 2 | 20 | 3.50 (0.83) | .212 | 18 | 3.50 (1.04) | .477 |
| Item 3 | 20 | 3.60 (0.94) | .675 | 18 | 3.56 (0.92) | .797 |
| Item 4 | 20 | 2.90 (1.07) | .965 | 18 | 2.72 (1.02) | .731 |
| Item 5 | 20 | 2.65 (0.93) | .838 | 18 | 2.56 (0.78) | .516 |
| Item 6 | 20 | 2.90 (0.85) | .945 | 18 | 2.72 (0.83) | .866 |
| Item 7 | 20 | 3.45 (1.15) | .610 | 18 | 3.11 (1.02) | .446 |
| Item 8 | 20 | 3.35 (0.88) | .439 | 18 | 3.00 (0.84) | .805 |
| Item 9 | 20 | 1.30 (0.57) | .596 | 18 | 1.22 (0.55) | .836 |
| Item 10 | 20 | 3.35 (0.81) | .791 | 18 | 3.33 (0.91) | .648 |
| Item 11 | 20 | 2.00 (0.73) | .296 | 18 | 2.00 (0.84) | .376 |
| Item 12 | 20 | 3.20 (0.77) | .504 | 18 | 3.00 (0.84) | .822 |
| Item 13 | 20 | 3.10 (0.97) | .866 | 18 | 2.83 (0.86) | .522 |
| Item 14 | 20 | 3.20 (0.76) | .886 | 18 | 3.11 (0.76) | .293 |
| Item 15 | 20 | 3.20 (0.89) | .915 | 18 | 3.06 (0.94) | .930 |
| Item 16 | 20 | 2.90 (0.91) | .396 | 18 | 2.78 (0.94) | .207 |
| Item 17 | 20 | 3.35 (0.75) | .315 | 18 | 3.22 (0.94) | .487 |
| Item 18 | 18 | 2.83 (0.92) | .995 | 18 | 2.78 (0.81) | .465 |
| Item 19 | 20 | 3.75 (0.91) | .956 | 18 | 3.50 (0.92) | .192 |
| Item 20 | 20 | 3.05 (1.19) | .977 | 18 | 2.61 (0.98) | .559 |
| Item 21 | 20 | 3.15 (0.75) | .476 | 18 | 3.06 (0.87) | .274 |
| Item 22 | 20 | 1.45 (0.60) | .454 | 18 | 1.33 (0.59) | .251 |
| Item 23 | 20 | 1.45 (0.60) | .454 | 18 | 1.33 (0.59) | .251 |
| Item 24 | 19 | 3.00 (1.11) | .647 | 18 | 2.67 (1.24) | .407 |
| Total | 20 | 69.3 (14.0) | .881 | 18 | 66.2 (13.9) | .943 |

Values are mean (SD) for continuous variables. The mean (SD) corresponds to the total number of teachers who took the evaluation, while the p-value shown is the comparison between the responses of teachers at the 3 levels of education: primary, secondary and university. Each item could receive a score from 1 to 5. The total score could vary between 24 and 120. The description corresponding to each numerical value was as follows: 1. Unsatisfactory, unacceptable, does not meet standards, needs revision; 2. Inadequate, below average, needs improvement, underdeveloped; 3. Good, satisfactory, basic, meets requirements; 4. Very good, above average, competent; 5. Exemplary, clearly exceeds standards, mastery.

Furthermore, a t-test was performed to determine differences by sex (third phase), and no statistically significant differences were found on none of the occasions, neither in the test nor in the retest (p-value = .774 and .518, respectively), (data not shown).

DISCUSSION

Results from this study show that the evaluation instrument for physical education sessions is reliable and feasible. The evaluation instrument will be used to evaluate the physical education sessions and the teaching task. It is therefore a very useful instrument to encourage reflection and improvement of the teaching-learning process.

Like the instrument of the NAPSE (National Association for Sport and Physical Education (NASPE), 2007), the aim of this evaluation instrument is, in addition to assisting principals, school district curriculum specialists, and others who evaluate physical education teachers; to provide guidance to physical education teachers for co-evaluation and reflection, as well as to serve as an instructional instrument in university physical education teacher education programs. In addition, the evaluation instrument is presented in 3 languages: English, Spanish, and Catalan, to reach as many teachers as possible with this instrument.

Even though the session visualised in the third phase, to be evaluated by the evaluation instrument designed, was a primary school session, no differences were found between the teachers of the 3 educational levels, nor between men and women. We are aware that more studies are needed to validate the instrument to evaluate physical education sessions at the three levels, but we consider that the results obtained are very promising and that the instrument is very simple and practical to use in day-to-day physical education sessions, which is an advantage that adds to the reliability and feasibility demonstrated through this study.

Furthermore, this instrument takes into account international recommendations for the evaluation of physical education (National Association for Sport and Physical Education (NASPE), 2007; SHAPE America — Society of Health and Physical Educators, 2016), but at the same time incorporates new aspects that allow it to be better adjusted to the current context, such as the inclusion of a sixth response option of "not observed" to adapt to the characteristics of each session, or the item that evaluates gender equality, evaluating and promoting a fundamental aspect of 21st-century education, co-education (González-Valero, San Román-Mata, Ubago-Jiménez, & Puertas-Molero, 2020; Sánchez Torrejón & Barea Villalba, 2019).

A marked strength of this study was the methodology used in each phase, which has made it possible to assess the usefulness of the instrument on 3 occasions: with the students of the primary education degree (first phase), with the group of experts (second phase), and with the group of primary, secondary and university teachers (third phase). It is important to highlight the innovation of the project, incorporating very relevant aspects into the instrument to achieve the education we want for the next generations: a participatory, responsible, healthy, inclusive, and equal population. Finally, the consistency of the results shows the reliability and feasibility of the designed instrument. In terms of limitations, the present study has not validated the instrument. Although the sample size was limited, conclusive results have been obtained. Using a single physical education session to measure feasibility and reliability has limited the extrapolation of the results to educational levels other than primary education, although no significant differences were found in the responses of teachers at the 3 educational levels.

CONCLUSIONS

In conclusion, the presented instrument is feasible and reliable for evaluating physical education sessions in primary education. Moreover, it is relevant, visual, easy, and comfortable to use, which are very important characteristics for an evaluation instrument in physical education. Although no secondary education or university sessions were evaluated, no significant differences were found between the teachers of different levels who used the evaluation instrument. Further studies are needed to validate the present instrument.

AUTHOR CONTRIBUTIONS

AMGP, PPS, PAB and AMM conceived of the study. AMGP and AMM completed the statistical analysis. AMGP, PPS, PAB and AMM drafted the manuscript. AMGP supervised the study. All authors were involved in oversight of recruitment, data collection, revision of the manuscript and read and approved the final manuscript.

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DISCLOSURE STATEMENT

The authors declare that they have no competing interests. Authors are agreeing to Copyright Notice as part of the submission process.

ETHICS DECLARATIONS

All experimentation was conducted in conformity with ethical and humane principles of research.

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ANNEX 1. Numerical observation scale for the evaluation of physical education sessions in Spanish.

| EVALUACIÓN DEL PROCESO DE ENSEÑANZA EN EDUCACIÓN FÍSICA | |
|---|------|
| *1. Insatisfactorio, inaceptable, no cumple los estándares, necesita revisión. | Núm. |
| 2. Insuficiente, por debajo de la media, necesita mejora, poco desarrollado. | |
| 3. Bien, satisfactorio, básico, cumple los requisitos. | |
| 4. Muy bien, superior a la media, competente. | |
| 5. Ejemplar, supera claramente los estándares, maestría | |
| NP. No procede: Para aquellas situaciones en las que, por la naturaleza de la sesión, el ítem no se pueda | |
| observar | |
| ESPACIOS, MATERIALES Y AGRUPACIONES | |
| 1. Limita los desplazamientos innecesarios entre tareas favoreciendo transiciones rápidas. | |
| 2. Prepara el material y su distribución con antelación a la sesión y con criterio de eficacia. | |
| 3. Gestiona el material durante la sesión para maximizar el tiempo de práctica. | |
| 4. Agrupa y organiza al alumnado buscando siempre que estén activos y ninguno esté parado. | |
| TAREAS | |
| 5. Programa adecuadamente el número de tareas y el tiempo dedicado a cada una para lograr los | |
| aprendizajes: objetivos, contenidos y competencias clave. | |
| 6. Diseña las tareas para desarrolla la competencia motriz . | |
| 7. Diseña las tareas para fomentar la máxima participación de todo el alumnado y el tiempo de | |
| compromiso motor (es igual o superior al 50% de la sesión). | |
| 8. Asegura la participación práctica de todo el alumnado, con independencia de su nivel de competencia | |
| motriz. | |
| 9. Asigna tareas al alumnado que no puede realizar la sesión práctica (lesiones, ropa inapropiada, etc.). | |
| 10. Garantiza la seguridad del alumnado en todas las tareas. | |
| INTERVENCIÓN | |
| 11. Explica los objetivos de la sesión a su inicio y los relaciona con aprendizajes anteriores. Se trabajan a través de los 3 ámbitos: cognitivo, psicomotor y afectivo. | |
| 12. Comunica con claridad, aporta información suficiente y bien estructurada. | |
| 13. Ejemplifica y resuelve las dudas antes de empezar la tarea. | |
| 14. Capta la atención del alumnado y desarrolla rutinas de escucha. | |
| 15. Muestra dominio del contenido que enseña. | |
| 16. Ofrece feedback que motiva al alumnado. | |
| 17. Se desplaza por el espacio para: observar, escuchar, dar feedback, resolver dudas, etc. | |
| 18. Se adapta a imprevistos, situaciones cambiantes y necesidades del alumnado. | |
| 19. Escucha al alumnado y crea un clima de confianza que favorece la comunicación. | |
| 20. Gestiona el tiempo de forma eficiente a lo largo de la sesión, dedicando tiempo suficiente a cada | |
| actividad y siguiendo la programación. | |
| 21. Tiene en cuenta la coeducación durante toda la sesión: lenguaje, contenidos y metodologías. | |
| 22. Registra aspectos de la sesión para la evaluación del alumnado . | |
| 23. Registra aspectos de la sesión para la evaluación de la sesión. | |
| 24. Finaliza la sesión con una reflexión grupal , dando feedback y motivando al alumnado. | |
| OBSERVACIONES: | |
| | |

ANNEX 2. Numerical observation scale for the evaluation of physical education sessions in Catalan.

| EVALUACIÓ DEL PROCES D'ENSEÑANZA A EDUCACIÓ FÍSICA | |
|--|------|
| *1. Insatisfactori, inacceptable, no compleix els estàndards, necessita revisió. | Núm. |
| 2. Insuficient, per sota de la mitjana, necessita millora, poc desenvolupat. | |
| 3. Bé, satisfactori, bàsic, compleix els requisits. | |
| 4. Molt bé, superior a la mitjana, competent. | |
| Exemplar, supera clarament els estàndards, mestratge | |
| NP. No procedeix: Per a aquelles situacions en les quals, per la naturalesa de la sessió, l'ítem no es pugui | |
| observar | |
| ESPAIS, MATERIALS I AGRUPACIONS | |
| 1. Limita els desplaçaments innecessaris entre tasques afavorint transicions ràpides. | |
| 2. Prepara el material i la seva distribució amb antelació a la sessió i amb criteri d'eficàcia. | |
| 3. Gestiona el material durant la sessió per a maximitzar el temps de pràctica. | |
| 4. Agrupa i organitza a l'alumnat buscant sempre que estiguin actius i cap estigui parat. | |
| TASQUES | |
| 5. Programa adequadament el nombre de tasques i el temps dedicat a cadascuna per a aconseguir els aprenentatges: objectius, continguts i competències clau. | |
| 6. Dissenya les tasques per a desenvolupa la competència motriu. | |
| 7. Dissenya les tasques per a fomentar la màxima participació de tot l'alumnat i el temps de compromís | |
| motor (és igual o superior al 50% de la sessió). | |
| 8. Assegura la participació pràctica de tot l'alumnat, amb independència del seu nivell de competència | |
| motriu. | |
| 9. Assigna tasques a l'alumnat que no pot realitzar la sessió pràctica (lesions, roba inapropiada, etc.). | |
| 10. Garanteix la seguretat de l'alumnat en totes les tasques. | |
| INTERVENCIÓ | |
| 11. Explica els objectius de la sessió al seu inici i els relaciona amb aprenentatges anteriors. Es treballen | |
| a través dels 3 àmbits: cognitiu, psicomotor i afectiu. | |
| 12. Comunica amb claredat, aporta informació suficient i ben estructurada. | |
| 13. Exemplifica i resol els dubtes abans de començar la tasca. | |
| 14. Capta l'atenció de l'alumnat i desenvolupa rutines d'escolta. | |
| 15. Mostra domini del contingut que ensenya. | |
| 16. Ofereix feedback que motiva a l'alumnat. | |
| 17. Es desplaça per l'espai per a: observar, escoltar, donar feedback, resoldre dubtes, etc. | |
| 18. S'adapta a imprevistos, situacions canviants i necessitats de l'alumnat. | |
| 19. Escolta a l'alumnat i crea un clima de confiança que afavoreix la comunicació. | |
| 20. Gestiona el temps de manera eficient al llarg de la sessió, dedicant temps suficient a cada activitat i | |
| seguint la programació. | |
| 21. Té en compte la co-educació durant tota la sessió: llenguatge, continguts i metodologies. | |
| 22. Registra aspectes de la sessió per a l'avaluació de l'alumnat. | |
| 23. Registra aspectes de la sessió per a l' avaluació de la sessió . | |
| 24. Finalitza la sessió amb una reflexió grupal , donant feedback i motivant a l'alumnat. | |
| OBSERVACIONS: | |



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