

Formative and shared assessment: Literature review on the main contributions in physical education and physical education teacher education

European Physical Education Review
1–18

© The Author(s) 2023

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/1356336X231220995

journals.sagepub.com/home/epe



Diego Herrero-González

Universidad de Valladolid, Spain

Víctor Manuel López-Pastor 

Universidad de Valladolid, Spain

Juan Carlos Manrique-Arribas

Universidad de Valladolid, Spain

André Moura 

University of Limerick, Ireland

Abstract

Assessment is a key element in the teaching–learning process in physical education (PE). In 2020, the Association Internationale des Écoles Supérieures d'Éducation Physique (AIESEP) published a position statement on PE assessment, in which it reviews the current state of the field and establishes the current yet forward-looking main lines of research on this topic. The most widely used approach, which this article reviews in depth, is assessment for learning (AfL). In Spain, the most widespread approach employed in PE throughout primary and secondary education in the last 25 years has been formative and shared assessment, which clearly aligns with the AIESEP position statement. The objective of this study was to gain an understanding of the main contributions of the formative and shared assessment model in PE and PE teacher education (PETE). Four databases (ERIC, SCOPUS, WOS and DIALNET) were explored, and 51 documents were selected on which an inductive thematic analysis was conducted. The evidence obtained at different educational levels and contexts seems to show a positive influence of formative and shared assessment on learning outcomes, which has favoured the expansion of the model, especially in PETE. Research on the transfer of PETE to educational practice has indicated that adequate continuing professional development seems necessary to help teachers integrate formative and shared assessment in their PE

Corresponding author:

Víctor Manuel López-Pastor, Departamento de Didáctica de la Expresión Musical, Plástica y Corporal, Universidad de Valladolid, Segovia, Spain.

Email: victor.lopez.pastor@uva.es

classroom. In conclusion, this model can provide an answer to some of the current questions being raised at an international level about PE assessment, especially in relation to students' involvement in the assessment process and its role in PETE.

Keywords

Formative assessment, assessment for learning, physical education, shared assessment, professional competencies, physical education teacher education

Introduction

Assessment can have a huge impact on the teaching–learning process in physical education (PE), but it has mostly been used as a way of marking students (Hay et al., 2015). However, approaches that focus on how it can be used as a support for learning have emerged throughout the last few decades, providing an understanding of the use of assessment in PE with formative purposes (López-Pastor et al., 2013). While most PE researchers worldwide refer to assessment for learning (AfL) (Leirhaug and MacPhail, 2015; Moura et al., 2021; Tolgfors, 2019), formative and shared assessment is more commonly used in the literature on assessment in PE in some Spanish-speaking countries (Hamodi et al., 2017; López-Pastor and Pérez-Pueyo, 2017).

Formative and shared assessment unites formative assessment (learning-oriented assessment, integrated into the daily teaching–learning process) and shared assessment (assessment as a dialogical process between the teacher and students to promote students' participation in the assessment and learning process) (López-Pastor, 1999). For an assessment practice to be considered formative and shared assessment it needs to: (a) be part of the teaching–learning process; (b) have a formative purpose to improve students' and teachers' learning and subject efficacy; and (c) allow students to actively participate with the teacher in the assessment process (shared assessment) (López-Pastor, 1999, 2006).

The aim of this paper was to gain an understanding of the main contributions of formative and shared assessment in PE and PE teacher education (PETE). Formative and shared assessment has similarities with AfL but is not well-represented in the international literature. The authors of this study believe that providing international PE researchers with a different vision of the use of assessment for formative purposes might contribute to reflections and improvements in the implementation of AfL itself. Until now, no literature review written in English of formative and shared assessment has been conducted on the scientific literature.

AfL in PE and PETE: literature review

AfL is underpinned by socio-constructivist learning theories and envisages learning as jointly created by teachers, learners and the environment around them, with the teacher and students working together on the collection of evidence and regulation of students' learning (AIESEP, 2020). AfL answers the call for alignment of the three message systems: assessment, curriculum and pedagogy (Penney et al., 2009). Leirhaug and Annerstedt (2016) signalled four AfL key principles: (1) sharing learning intentions with students; (2) sharing criteria for success; (3) involving students in assessing their own (and other students') learning; and (4) providing feedback that moves learners forward. These principles are essential in embedding assessment in curriculum and pedagogy and in promoting a socio-constructivist

learning environment, enabling students to play an active role in their learning (Hay et al., 2015). Evidence collected through assessment is used to adapt the teaching–learning process to attend to students’ needs and allow them to reach their learning goals (Leirhaug and MacPhail, 2015). Although AfL is acknowledged as likely to have a positive effect on students’ learning in PE, several studies recognise the importance of initial and ongoing (teacher) education in assessment and welcome the expansion of research in this area, particularly empirical studies (AIESEP, 2020; Moura et al., 2021; Ní Chróinín and Cosgrave, 2013).

Formative and shared assessment in PE in Spain

Different assessments closely linked to alternative assessment or to AfL in PE have emerged in Spain over the last 25 years (Blázquez, 2017; Fernández-Balboa, 2005; Hernández and Velázquez-Buendía, 2004; López-Pastor, 1999, 2006; Lorente-Catalán, 2008; Moreno et al., 2006). The first studies emerged as a critical review and an alternative to traditional assessment in PE (systematic use of fitness tests for assessment and marking in PE) and emphasised the participation of students in assessment (López-Pastor and Jiménez-Cobos, 1994). These authors described several experiences of self-assessment that were intended to be pedagogical and personally meaningful for students and teachers. The same authors advocated for PE oriented to the promotion of students’ autonomy and for assessment aligned with that purpose. They also signalled the need to implement more formative assessments in PE involving students in the assessment process, something that occurred throughout the following years.

Formative and shared assessment in PE is underpinned by the work of Álvarez-Méndez (1985), Santos-Guerra (1993) and López-Pastor (1999, 2006). The works of authors from the field of general didactics (Álvarez-Méndez, 1985; Santos-Guerra, 1993) present the theoretical basis of formative and shared assessment in PE. These authors considered the teaching–learning process as a shared process between the teacher and student. The book by López Pastor (2006) compiled the practices of 31 PE teachers conducting action-research studies across all educational levels (primary, secondary and PETE). This book is organised into two parts: (1) theoretical framework; and (2) experiences and assessment instruments.

Formative and shared assessment operates under the idea that there is no assessment approach that works well in all educational contexts, giving teachers the freedom to make the decisions and use the strategies most appropriate to their specific context. To be considered a formative and shared assessment, an assessment needs to meet seven criteria of quality assessment (López-Pastor, 1999, 2006) (Table 1). Formative and shared assessment in PE is based on three successive and aligned steps: (a) questions/problems to solve, which help students to move towards the goals established by teachers; (b) quality criteria, which allow for assessments to be designed and adapted to individual educational contexts and articulated with teachers’ conceptions; and (c) clustered guidelines of different assessment techniques and instruments to use in daily PE practice. Table 1 provides a summary of the three sequential steps.

Since the most widely used approaches are AfL, and in Spain, formative and shared assessment, this study aimed to analyse what is common and different between them (Tables 2 and 3).

Comparison of AfL and formative and shared assessment in PE

In Table 2, 15 criteria are addressed – taking into consideration AfL (AIESEP, 2020; Leirhaug and Annerstedt, 2016) and formative and shared assessment (López-Pastor, 1999, 2006) literature – to

Table 1. Three sequential steps of formative and shared assessment in PE.

Questions/problems to solve	Criteria of quality assessment	Guidelines
1. How to embed assessment in the daily teaching–learning process?	1. Adjusting assessment to curriculum design, students' characteristics, context and pedagogical approaches.	A. Teacher's notebook.
2. How to set an effective assessment to improve the teaching–learning process, students' learning, and teacher's teaching?	2. Relevance of the information provided to those implicated in the teaching–learning process.	B. Lesson worksheets, didactic units and students' notebooks.
3. How to outline a formative and ongoing assessment?	3. Validity and credibility of data collected on assessment.	C. Instruments to assess students' work, students' notebooks and portfolios.
4. How to make formative and shared assessment feasible for any PE teacher? How to make it a help and not a burden?	4. Be formative: promoting and facilitating students' and teacher's learning and improving subject efficacy.	D. Instruments for students to fill out (self-assessment forms, rubrics, different types of scales, etc.) or for teacher's observation.
	5. Embedding assessment in the teaching–learning process.	E. Group dynamics, research cycles, and meta-evaluation at the end of a lesson to analyse their teaching or assessment process.
	6. Feasibility on the usual working conditions of any PE teacher without causing overload.	
	7. Ethics in relation to the use of information and the power associated with grading.	

compare which criteria are common and different between them. Table 3 presents some basic questions about assessment in order to enhance this analysis.

Tables 2 and 3 show that formative and shared assessment and AfL are similar in several aspects. The main ones are related to: (1) using feedback to move learners forward; (2) using assessment to improve students' learning; (3) involving students; (4) embedding assessment in the teaching–learning process (alignment between assessment, curriculum and pedagogy); (5) clarifying and sharing learning intentions with students; and (6) empowering students to regulate their own learning.

Moreover, the tables also illustrate some differences. In formative and shared assessment, assessment is used to: (a) improve teachers' teaching and the subject itself (in the same year and for future years); (b) look for valid and fair assessment processes; (c) ensure feasibility of the assessment system (avoid teachers' work overload); and (d) promote the ethical use of assessment information and impact of marking.

Formative and shared assessment incorporates both assessment for and of learning and promotes dialogues between the teacher and students not only in relation to how to improve students' learning, but also on how to improve the assessment process. It clearly outlines assessment techniques and tools to help plan formative and shared assessment in any context. While any assessment that intends to improve students' learning and engagement in the teaching–learning process can be considered AfL, to be considered formative and shared assessment, the specific guidelines mentioned above need to be addressed. With this in mind, the aim of this paper was to gain an understanding of the main contributions of formative and shared assessment in PE and PETE.

Table 2. Comparison of AfL and formative and shared assessment regarding key criteria.

	Criteria	AfL in PE	Formative and shared assessment in PE
Four AfL criteria, according to AIESEP (2020)	Assessment focused on improving students' learning	Yes, key criterion	Yes, important criterion
	Includes qualitative feedback that moves students' learning forward	Yes, key criterion	Yes, important criterion
	Be embedded in the learning process	Yes, key criterion	Yes, key criterion
	High level of students' participation	Yes, key criterion, gradually increasing throughout the entire process	Yes, key criterion throughout the entire process
Four AfL criteria, according to Leirhaug and Annerstedt (2016)	Share learning intentions with students	Yes, key criterion to create a transparent process and encourage students' regulation processes	Yes, important criterion
	Share criterion for success	Yes, key criterion, linked to regulation processes (usually, self- and peer-assessment)	Yes, important criterion, linked to shared assessment between teacher and students
	Involve students in assessing their own (and other students') learning	Yes, key criterion, linked to self- and peer-assessment	Yes, important criterion, linked to the shared assessment process between teacher and students
	Provide feedback that moves learners forward	Yes, key criterion	Yes, key criterion
Seven criteria of quality assessment to be considered formative and shared assessment (López-Pastor, 1999, 2006)	Adjusting assessment to curriculum design, students' characteristics, context and pedagogical approaches	Yes, key criterion	Yes, key criterion
	Relevance of the information provided to those implicated in the teaching–learning process	Does not appear as an explicit criterion. The amount of information collected is up to the teacher	Yes, key criterion to make assessment feasible for any PE teacher regardless of the number of students. Selection of the amount of information collected according to the teacher's number of students/classes
	Validity and credibility of data collected on assessment	Does not appear as an explicit criterion	Yes, key criterion

(continued)

Table 2. Continued.

Criteria	AfL in PE	Formative and shared assessment in PE
Be formative: promoting and facilitating students' and teacher's learning and improving subject efficacy	Yes, key criterion but only in relation to students' learning. The improvement of the teaching–learning process is a consequence of the intention to improve students' learning	Yes, key criterion in relation to improving students' and teacher's learning and improving subject efficacy
Embedding assessment in the teaching–learning process	Yes, key criterion	Yes, key criterion
Feasibility on usual working conditions of any PE teacher without causing overload	Does not appear as an explicit criterion. It is only stated that AfL principles are 'tight but loose'	Yes, key criterion to avoid teachers' overload
Ethics in relation to the use of information and the power associated with grading	Grading belongs to assessment of learning and is not considered in AfL	Yes, key criterion. The assessment system incorporates the transition from assessment for learning to assessment of learning

AfL: assessment for learning; PE: physical education.

Methodology

Research objective and design

The present study is a systematic literature review composed of the following steps: (1) to define the research objective and design; (2) to decide on the studies to be collected, developing inclusion and exclusion criteria; (3) to perform the literature search in relevant databases using key terms and key-words; (4) to critically appraise the studies found with respect to the inclusion and exclusion criteria; and (5) to synthesise the most significant results (Petticrew and Roberts, 2006).

Inclusion and exclusion criteria

The inclusion and exclusion criteria for the systematic review were: (1) full texts mainly focused on formative and shared assessment in PE or PETE; (2) reviews of formative and shared assessment in PE or PETE; (3) either the result of experiences or application of formative and shared assessment in PE or PETE; (4) linking formative and shared assessment in PE or PETE with instructional/curriculum models; (5) written in English or Spanish; and (6) peer-reviewed. The systematic review

Table 3. Comparison of AfL and formative and shared assessment regarding basic questions about types of assessment.

Questions	AfL in PE	Formative and shared assessment in PE
Assessing for what purpose?	Improve students' learning	Improve students' and teacher's learning and improve subject efficacy (throughout and for following years)
When is assessment used?	In the beginning and throughout the teaching–learning process	In the beginning, throughout and at the end of the teaching–learning process
What and who are assessed during the process?	Students' learning and the teaching–learning process	Students, teacher and the teaching–learning process
Who participates in the process?	Teacher and students	Teacher and students
How are students involved in the process?	Through self- and peer-assessment, dialogical feedback and assessment by sharing and ensuring students know and understand assessment criteria and learning goals	Through self-, peer- and shared assessment (dialogical assessment between teacher and student or teacher and students)
What are the guidelines?	Using assessment to improve students' learning. The four AfL principles contain several assessment techniques however, they are 'tight but loose', which means every teacher has to find their own ways of putting them into practice in their own reality	Using assessment to improve students' and teachers' learning and improve subject efficacy. Guidelines are explained in Table 1

AfL: assessment for learning; PE: physical education.

was not limited to any time period, as it attempted to identify as many contributions on formative and shared assessment in PE and PETE as possible.

Databases and key terms

The search was conducted in four databases (ERIC, SCOPUS, WOS and DIALNET). WOS, SCOPUS, and ERIC are international databases and DIALNET is the biggest and most complete Spanish database in education. Searches considered the title, abstract and keywords in both English and Spanish. Table 4 shows the results obtained for each term in the databases. The search was completed on 30 September 2022, with a total of 1297 articles, later narrowed down to 316 studies after removing duplicates.

Critical selection of studies

Three of the four authors work in higher education while the other works in primary education. The four authors, experts in the formative and shared assessment model, assessed the methodological reliability of the studies, selecting the most relevant studies from the 316, according to the inclusion and exclusion criteria. The selection process resulted in 44 scientific articles in total. In order to have a wider and deeper search, a complementary manual search was carried out, adding seven

Table 4. Results obtained from the search of the databases.

	ERIC	SCOPUS	WOS	DIALNET
"Evaluación Formativa y Compartida" AND "Educación Física"	0	7	2	95
"Evaluación Formativa y Compartida" AND "Educación Física" AND ("Formación Inicial del Profesorado" OR "Formación del Profesorado")	0	3	1	37
"Evaluación Formativa" AND "Educación Física"	0	20	12	204
"Evaluación Formativa" AND "Educación Física" AND ("Formación Inicial del Profesorado" OR "Formación del Profesorado")	0	9	5	75
"Evaluación Compartida" AND "Educación Física"	0	2	2	34
"Evaluación Compartida" AND "Educación Física" AND ("Formación Inicial del Profesorado" OR "Formación del Profesorado")	0	2	2	21
"Formative and Shared Assessment" AND "Physical Education"	4	22	23	26
"Formative and Shared Assessment" AND ("Physical Education" AND "Teacher Education" OR "Teacher Training" OR "Pre-Service Teacher Education")	3	20	21	23
"Formative Assessment" AND "Physical Education"	40	88	100	66
"Formative Assessment" AND "Physical Education" AND ("Teacher Education" OR "Teacher Training" OR "Pre-Service Teacher Education")	25	40	47	47
"Shared Assessment" AND "Physical Education"	6	26	28	28
"Shared Assessment" AND "Physical Education" AND ("Teacher Education" OR "Teacher Training" OR "Pre-Service Teacher Education")	4	26	25	26
Total	82	265	268	682

documents, including books and book chapters that satisfied all the inclusion and exclusion criteria. In total, 51 documents were analysed (Figure 1).

Synthesis of the most relevant results

The analysis was based on a reading-through of the data. For this purpose, key data were collected from the selected publications in the review, such as methodology and conclusions ('Attachment 1': Supplemental Material). The analysis was carried out in chronological order and the codification process started with the analysis of the information presented in 'Attachment 1'. Selected studies were examined by an inductive analysis that allowed creating and defining themes that show how the formative and shared assessment model has evolved in PE and PETE. This process involved continuous reading and constant modifications of the themes (Braun and Clarke, 2019). These themes were organised into two categories and seven subcategories (Table 5).

Results and discussion

Contributions of the formative and shared assessment model in PE

This category is organised into two subcategories: (1) main advantages and disadvantages of formative and shared assessment in PE; and (2) combination of formative and shared assessment with curriculum models in PE.

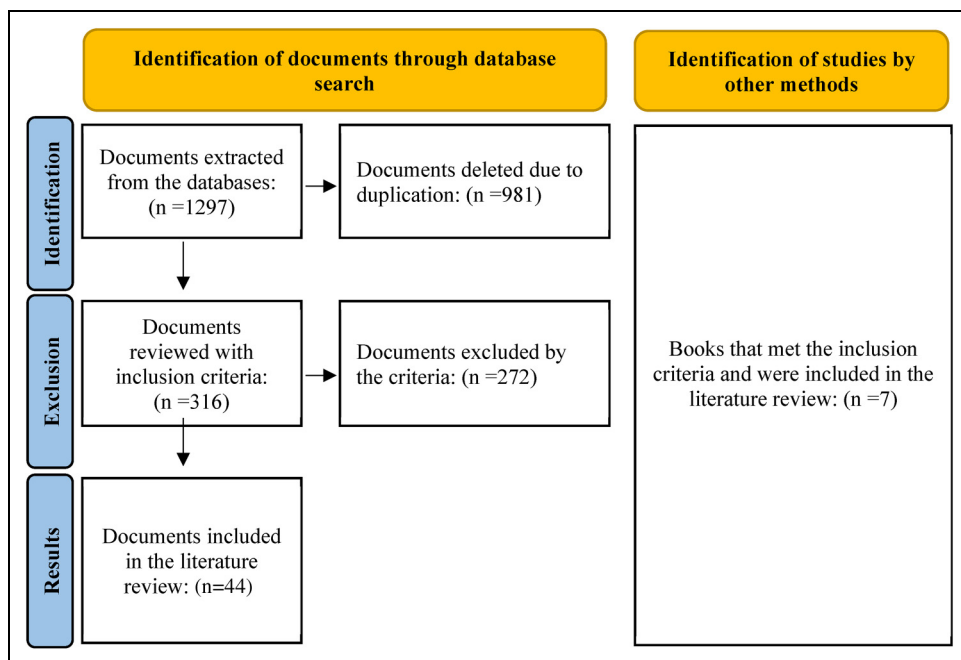


Figure 1. Identifying documents.

Main advantages and disadvantages of formative and shared assessment in PE. The data show that the formative and shared assessment model has been applied in PE, at all stages of compulsory education (kindergarten, primary and secondary) and in PETE (López-Pastor, 1999, 2004, 2006). In recent years, this model has been transferred from PE to other subjects. Data from its implementation suggest evidence of good practice across all stages of compulsory education (López-Pastor and Pérez-Pueyo, 2017). Both collective books, coordinated by López-Pastor (2006) (31 authors) and by López-Pastor and Pérez-Pueyo (2017) (36 authors), show good practice experiences carried out in different schools all over Spain that resulted in the improvement of students' learning and teaching quality. These books explore the issue of student participation in assessment, from the simplest forms of self- and peer-assessment to more complex formats, for example, shared and democratic assessment. They also examine the pedagogical reasons for the development and linking with self-regulation learning processes and learner autonomy (López-Pastor, 1999, 2004, 2006; López-Pastor and Pérez-Pueyo, 2017). The literature shows more advantages than disadvantages of applying formative and shared assessment. The ones the authors consider most relevant to address are listed below, together with some possible solutions from the reviewed studies.

The main advantages shown by the data are that formative and shared assessment: (a) is feasible at all stages; (b) favours students' learning, involvement, motivation, and autonomy; (c) improves the classroom climate; and (d) enables teachers' professional development (López-Pastor, 1999, 2004, 2006; López-Pastor and Pérez-Pueyo, 2017). The main disadvantages are that: (1) students need time to understand the assessment system and provide truly useful information; and (2) teachers need to adjust their workload to make it feasible over time. Some solutions that may allow teachers

Table 5. Categories and subcategories of formative and shared assessment in PE and PETE.

Category	Subcategory	Document
1. Contributions of the formative and shared assessment model in PE	1.1. Main advantages and disadvantages of formative and shared assessment in PE	López-Pastor (1999, 2004, 2006); Herranz-Sancho and López-Pastor (2014); López-Pastor and Pérez-Pueyo (2017); Bores et al. (2021); Fuentes-Nieto et al. (2022)
	1.2. Combination of formative and shared assessment with curriculum models in PE	López-Pastor et al. (2008); Pérez-Pueyo (2010); Herrero-González et al. (2020); Hortigüela et al. (2020); Pérez-Pueyo et al. (2020, 2021)
2. Contributions of the formative and shared assessment model in PETE	2.1. Main advantages and disadvantages of formative and shared assessment in PETE	López-Pastor (2008, 2009); Castejón et al. (2011); Atienza et al. (2016); Gallardo and Carter (2016); López-Pastor and Pérez-Pueyo (2017); Romero et al. (2017); Gallardo et al. (2019, 2020)
	2.2. Combination with active methodologies in PETE: tutored learning projects and formative and shared assessment	Manrique et al. (2010); Martínez-Mínguez (2016); López-Pastor et al. (2020)
	2.3. Students' and teachers' perceptions of the use of formative and shared assessment in PETE	Martínez-Muñoz et al. (2012, 2017); Gutiérrez-García et al. (2013); Castejón et al. (2015); Hortigüela and Pérez Pueyo (2016); López-Pastor et al. (2016); Martos et al. (2017); Gallardo et al. (2017, 2022); Cañadas et al. (2018)
	2.4. Transfer from PETE and CPD in PE	Navarro and Jiménez (2012); Lorente-Catalán and Kirk (2013); Lorente-Catalán et al. (2018); Córdoba et al. (2018); Molina and López-Pastor (2019); Barrientos et al. (2019, 2022); Herrero-González et al. (2021); Cañadas and Santos-Pastor (2021)
	2.5. Students' self-perception of developing teaching competency	Arribas et al. (2016); Asún et al. (2017); Romero et al. (2017); Estevan et al. (2018); Hamodi et al. (2018); Gallardo et al. (2018, 2020); Hortigüela et al. (2018); Cañadas et al. (2020, 2021)

PE: physical education; PETE: PE teacher education; CPD: continuing professional development.

to overcome these disadvantages are to employ techniques and tools that streamline the process using non-directive methodologies that allow teachers to focus on assessment (López-Pastor, 1999, 2006).

Herranz-Sancho and López-Pastor (2014) examined the feasibility of student participation not only in assessment, but also in marking in PE. Self-assessment, shared assessment, self-marking and dialogical marking processes were analysed. They concluded that formative and shared

assessment in primary school PE is feasible and helps to enhance learning. Students learn to use assessment information and to make strong arguments to establish progressively more objective grades.

The latest research studies show other advantages or possibilities for improvement. One of them (Bores et al., 2021) found that formative and shared assessment in PE increased motivation and engagement in secondary school students. Another study (Fuentes-Nieto et al., 2022) analysed the influence of information and communication technologies on authentic and transformative assessment processes in secondary PE, finding that they helped to reduce the time spent on self- and co-assessment, which was one of the main disadvantages reported in the research analysed.

Combination of formative and shared assessment with curriculum models in PE. Current studies (Hortigüela et al., 2020; Pérez-Pueyo et al., 2020) highlight the importance of combining formative and shared assessment with ‘more established’ curriculum models (Cooperative Learning, Teaching Games for Understanding, Sport Education, Personal and Social Responsibility Model) and ‘emerging’ curriculum models (Attitudinal Style, Self-Construction of Materials, Self-Regulation of Learning). The authors of these studies consider that including these models encourages greater student ownership and empowerment, making them more aware of what they learn, self-regulating their work and making better use of feedback. Hortigüela et al. (2020) and Pérez-Pueyo et al. (2020) list several strategies that can facilitate the use of formative and shared assessment with different curriculum models: (a) presenting learning objectives, assessment and marking activities to students; (b) embedding it as a core, planned element of the teaching; (c) providing ongoing and meaningful feedback, using different ways to record information; and (d) developing shared assessment and discussing the marking processes.

In Spain, the Cooperative Learning and the Attitudinal Style curriculum models have been applied together with the formative and shared assessment model in PE. Certain studies (Herrero-González et al., 2020; López-Pastor et al., 2008) show that PE teachers considered that using Cooperative Learning and formative and shared assessment together is coherent, as they promote students’ participation in assessment, and consequently, improve the teaching–learning process. The Attitudinal Style is a pedagogical model created in Spain (Pérez-Pueyo, 2010), the key element of which is the improvement of students’ attitudes in PE, their motivation and holistic child development. Some studies (Pérez-Pueyo, 2010; Pérez-Pueyo et al., 2021) show that formative and shared assessment aligns with this curriculum model and promotes the use of continuous feedback and reflection on learning acquisition when used together. These authors also found that combining these models enhanced group learning processes and student participation in assessment.

Contributions of the formative and shared assessment model in PETE

This category reviews the contributions of formative and shared assessment in PETE, organised into five subcategories.

Main advantages and disadvantages of formative and shared assessment in PETE. Several studies in Spain and Chile show the main advantages of using formative and shared assessment in PETE (Atienza et al., 2016; Castejón et al., 2011; Gallardo and Carter, 2016; Gallardo et al., 2019, 2020; López-Pastor, 2008, 2009; Romero et al., 2017). In all these studies, formative and shared assessment is linked to positive learning outcomes on learning, with students becoming critical

thinkers, and showing excellent academic performance. These studies also demonstrated gains in the socio-affective domain with students displaying high motivation and involvement in the learning process, responsibility, and autonomy. These positive outcomes also influence their learning as future teachers, showing that the impact of formative and shared assessment is beneficial for developing teaching competencies and facilitating the transfer between PETE and school PE. Assessment can be more beneficial when teaching is based on dialogical learning, student-centred models, and competence development (Atienza et al., 2016; Gallardo et al., 2019, 2020; López-Pastor, 2008, 2009; Romero et al., 2017). The results show that the active and ongoing involvement of PETE students in their learning, a more equitable distribution of their workload during the semester and knowing what is expected from them for each part of the course, enhanced their learning and academic results (Castejón et al., 2011; López-Pastor and Pérez-Pueyo, 2017; Romero et al., 2017).

Combination with active methodologies in PETE: tutored learning projects and formative and shared assessment. Different studies investigated the advantages of combining formative and shared assessment with active methodologies in PETE (López-Pastor et al., 2020; Manrique et al., 2010; Martínez-Mínguez, 2016). These studies found that the participating PETE students and teacher educators valued the combination of formative and shared assessment and tutored learning projects very positively. Tutored learning projects are a learning activity where PETE students create a learning proposal, and carry it out in a school, to develop different professional competencies. The development of the tutored learning projects involves a set of drafts that are reviewed with the tutor with the aim of improving them until the quality is good enough to put them into practice. PETE students considered that using formative and shared assessment in these projects resulted in fairer grades and the development of competencies which are important for their future as PE teachers. They valued the inclusion of formative and shared assessment, despite the increase in workload.

Students' and teachers' perceptions of the use of formative and shared assessment in PETE. Castejón et al. (2015) created and validated a questionnaire to research students' and teacher educators' perceptions after the implementation of formative and shared assessment in PETE. Most studies in Spain (Cañadas et al., 2018; Gutiérrez-García et al., 2013; Hortigüela and Pérez-Pueyo, 2016; López-Pastor et al., 2016; Martínez-Muñoz et al., 2012, 2017) and Chile (Gallardo et al., 2017, 2022) used this validated instrument and showed significant differences between PETE students' and teacher educators' perceptions of the use of formative and shared assessment in PETE. The students considered they were not sufficiently informed about the assessment process (Gutiérrez-García et al., 2013; Martínez-Muñoz et al., 2012). Teacher educators considered that they used formative and shared assessment to a greater extent than their students and graduates (Gutiérrez-García et al., 2013). However, both agreed that PETE students' participation in assessment was minimal (Gutiérrez-García et al., 2013; Martínez-Muñoz et al., 2012).

PETE students with more experience in the use of formative and shared assessment perceived greater learning and appreciated its use (Hortigüela and Pérez Pueyo, 2016). The results showed that PETE students liked to know the marking criteria from the beginning, as they considered that this facilitated their learning process. These PETE students also believed that experiencing formative and shared assessment during their teacher education would favour its use in their future work as PE teachers (Martos et al., 2017). Other studies (Cañadas et al., 2018; Martínez-Muñoz et al., 2017) reported that students mentioned that the use of formative and shared assessment in

PETE was coherent and appropriate, but they believed their participation in the marking processes could and should be increased. These results may indicate that some progress has been made in student participation in PETE assessment, but not in marking. However, more research on this is necessary.

Transfer from PETE and continuing professional development (CPD) in PE. Several studies have analysed if having experiences of formative and shared assessment in PETE increased the possibilities of students using this model in the future as PE teachers. Lorente-Catalán and Kirk (2013) reported that students who had experienced democratic assessment in PETE developed sufficient learning to enable them to use it as teachers, and Barrientos et al. (2019, 2022), Herrero-González et al. (2021) and Molina and López-Pastor (2019) showed that having experienced formative and shared assessment systems during their PETE helped pre-service PE teachers to use similar assessment systems during their teaching practice.

On the other hand, there was some resistance and difficulties, as expected, during the implementation of formative and shared assessment systems, such as the number of success criteria to be assessed and teacher's workload (Cañadas and Santos-Pastor, 2021; Lorente-Catalán et al., 2018).

Several studies (Barrientos et al., 2019, 2022; Córdoba et al., 2018; Herrero-González et al., 2021; Molina and López-Pastor, 2019; Navarro and Jiménez, 2012) showed that using formative and shared assessment in PE is not only about having good experiences during PETE, acknowledging CPD as essential. These studies showed that teachers who did not experience formative and shared assessment during their PETE changed their understanding of assessment through CPD. The PE teachers particularly highlighted the importance of collaborative working groups to support them when using formative and shared assessment. The results seem to demonstrate that either through PETE programmes or CPD, training on formative and shared assessment is important to support teachers implementing it in PE.

Students' self-perception of developing teaching competency. Several studies (Arribas et al., 2016; Asún et al., 2017; Cañadas et al., 2021; Gallardo et al., 2018, 2020; Hamodi et al., 2018; Hortigüela et al., 2018; Romero et al., 2017) analysed the relationship between the use of formative and shared assessment and the development of professional competencies in PETE and found that PETE students improved their self-perception of teaching competencies. In contrast, Estevan et al. (2018) found no significant differences. However, this variance in findings could be attributed to the education level at which the participants were working. Future PE teachers who will work in a primary setting consider they develop more generic competencies while those teachers who will work in post-primary PE put more emphasis on specific PE competencies (Hamodi et al., 2018). On the other hand, no significant differences were found in the perception of competence development depending on whether graduates are currently working as PE teachers or not (Cañadas et al., 2020).

Conclusions

The main focus of this paper was to gain an understanding of the principal contributions of the formative and shared assessment model in PE and PETE. Thus, a systematic review of the literature on the formative and shared assessment model in these contexts was carried out using information from four national and international databases.

Studies show the predominance of positive results in the application of formative and shared assessment, both in PE and PETE. Formative and shared assessment has been shown to have

many advantages in both contexts, but also some disadvantages. Combining formative and shared assessment with active methodologies and curriculum models in PE seems appropriate and mutually beneficial. Using formative and shared assessment in PETE seems to have a positive impact on the development of some teaching competencies. Finally, there seem to be two paths to using formative and shared assessment in PE: either to have experienced and worked on it during PETE, or to have learned about it in CPD, preferably through collaborative working groups. Experience in either PETE or CPD seems to play an important role in (future) teachers' confidence and ability to use formative and shared assessment in PE.

This article contributes to the international literature because it provides a better understanding of an assessment model in PE that is widespread and well-known in Spain and Chile, but relatively unknown in the international literature. We consider that raising awareness of this model may be productive and helpful in the ongoing discussion on how to improve students' learning through the use of assessment.

It would be interesting to see future studies analysing in depth if and how this model is currently influencing other curriculum models in PE, how it could combine with the incorporation of digital technology in assessment, and what, if any, consequences of that integration there would be on students' learning. It would also be interesting to have more studies researching the use of formative and shared assessment in the transition from PETE to PE, for example, in the school placement and after qualifying as teachers.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

André Moura  <https://orcid.org/0000-0003-2690-1029>

Víctor Manuel López-Pastor  <https://orcid.org/0000-0003-2681-9543>

Supplemental material

Supplemental material for this article is available online.

References

- AIIESEP (2020) *AIIESEP position statement on physical education assessment*. Available at: <https://aiesep.org/scientific-meetings/position-statements/>
- Álvarez-Méndez JM (1985) *Didáctica, Currículo y Evaluación*. Buenos Aires: Miño y Dávila.
- Arribas JM, Manrique JC and Tabernero B (2016) Instrumentos de evaluación utilizados en la formación inicial del profesorado y su coherencia para el desarrollo de competencias profesionales en los estudiantes: Visión del alumnado, egresados y profesorado. *Revista Complutense de Educación* 27(1): 237–225.
- Asún S, Romero MR and Chivite M (2017) Exploración de sistemas de evaluación formativa entre estudiantes universitarios en la provincia de huesca. *Apunts* 1(127): 52–58.
- Atienza R, Valencia A, Martos D, et al. (2016) La percepción del alumnado universitario de educación física sobre la evaluación formativa: Ventajas, dificultades y satisfacción. *Movimento* 22(4): 1033–1048.

- Barrientos EJ, López-Pastor VM and Pérez-Brunicardi D (2019) ¿Por qué hago evaluación formativa y compartida y/o evaluación para el aprendizaje en educación física? La influencia de la formación inicial y permanente del profesorado. *Retos* 36: 37–43.
- Barrientos EJ, López-Pastor VM, Lorente-Catalán E, et al. (2022) Challenges with using formative and authentic assessment in physical education teaching from experienced teachers' perspectives. *Curriculum Studies in Health and Physical Education* 14(2): 109–126.
- Blázquez D (2017) *Cómo evaluar bien Educación Física: El enfoque de la Evaluación Formativa*. Barcelona: INDE.
- Bores D, Hortigüela D, Hernando A, et al. (2021) Analysis of student motivation towards body expression through the use of formative and share assessment. *Retos* 40: 198–208.
- Braun V and Clarke V (2019) Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health* 11(4): 589–597.
- Cañadas L, Castejón FJ and Santos-Pastor ML (2018) Relación entre la participación del alumnado en la evaluación y la calificación en la formación inicial del profesorado de educación física. *Cultura, Ciencia y Deporte* 13(39): 291–300.
- Cañadas L and Santos-Pastor ML (2021) La evaluación formativa desde la perspectiva de docentes noveles en las clases de educación física en Primaria y Secundaria. *Revista Electrónica Educare* 25(3): 452–471.
- Cañadas L, Santos-Pastor ML and Castejón FJ (2020) Competencias del profesorado de educación física y valoración en la práctica profesional. *Apunts* 1(139): 33–41.
- Cañadas L, Santos-Pastor ML and Ruiz-Bravo P (2021) Percepción del impacto de la evaluación formativa en las competencias profesionales durante la formación inicial del profesorado. *Revista Electrónica de Investigación Educativa* 23: 1–13.
- Castejón FJ, López-Pastor VM, Julián JA, et al. (2011) Evaluación formativa y rendimiento académico en la formación inicial del profesorado de educación física. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte* 11(42): 328–346.
- Castejón FJ, Santos-Pastor ML and Palacios A (2015) Cuestionario sobre metodología y evaluación en formación inicial en educación física. *Revista Internacional de Medicina y Ciencias de la Actividad Física del Deporte* 15(58): 245–267.
- Córdoba T, López-Pastor VM and Sebastiani EM (2018) ¿Por qué hago evaluación formativa en educación física? Relato autobiográfico de un docente. *Estudios Pedagógicos* 44(2): 21–38.
- Estevan I, Molina J, García X, et al. (2018) Efecto de la intervención docente en la percepción de competencia y motivación de futuros maestros de Primaria en educación física utilizando la evaluación formativa y compartida. *Estudios Pedagógicos* 44(2): 205–221.
- Fernández-Balboa JM (2005) La autoevaluación como práctica promotora de la democracia y la dignidad. In: Sicilia Á and Fernández-Balboa JM (eds) *La Otra Cara de la Enseñanza: La Educación Física Desde una Perspectiva Crítica*. Barcelona: INDE, 127–158.
- Fuentes-Nieto T, López-Pastor VM and Palacios A (2022) A combination of transformative and authentic assessment through ICT in physical education. *Retos* 44: 728–738.
- Gallardo FJ and Carter B (2016) La evaluación formativa y compartida durante el prácticum en la formación inicial del profesorado: Análisis de un caso en Chile. *Retos* 29: 258–263.
- Gallardo FJ, Carter B and López-Pastor VM (2019) Evaluación formativa y compartida en la universidad chilena: Resultados tras cuatro años de implementación. *Revista Iberoamericana de Evaluación Educativa* 12(1): 139–155.
- Gallardo FJ, Carter B, López-Pastor VM, et al. (2022) Sistemas de evaluación en la formación del profesorado de educación física: Un estudio de casos en contexto chileno. *Retos* 43: 117–126.
- Gallardo FJ, López-Pastor VM and Carter B (2017) ¿Hay evaluación formativa y compartida en la formación inicial del profesorado en Chile? Percepción de alumnado, profesorado y egresados de una universidad. *Psychology, Society, & Education* 9(2): 227–238.
- Gallardo FJ, López-Pastor VM and Carter B (2018) Efectos de la aplicación de un sistema de evaluación formativa en la autopercepción de competencias adquiridas en formación inicial del profesorado. *Estudios Pedagógicos* 44(2): 55–77.

- Gallardo FJ, López-Pastor VM and Carter B (2020) Ventajas e inconvenientes de la evaluación formativa, y su influencia en la autopercepción de competencias en alumnado de formación inicial del profesorado en educación física. *Retos* 38: 417–424.
- Gutiérrez-García C, Pérez-Pueyo Á and Pérez-Gutiérrez M (2013) Percepciones de profesores, alumnos y egresados sobre los sistemas de evaluación en estudios universitarios de formación del profesorado de educación física. *Ágora* 15(2): 130–151. <http://uvadoc.uva.es/handle/10324/23757>
- Hamodi C, López-Pastor VM and López-Pastor AT (2017) If I experience formative assessment whilst studying at university, will I put it into practice later as a teacher? Formative and shared assessment in initial teacher education (ITE). *European Journal of Teacher Education* 40(2): 171–190.
- Hamodi C, Moreno JA and Barba RA (2018) Medios de evaluación y desarrollo de competencias en educación superior en estudiantes de educación física. *Estudios Pedagógicos* 44(2): 241–257.
- Hay P, Tinning R and Engstrom C (2015) Assessment as pedagogy: A consideration of pedagogical work and the preparation of kinesiology professionals. *Physical Education and Sport Pedagogy* 20(1): 31–44.
- Hernández JL and Velázquez-Buendía R (eds) (2004) *La evaluación en Educación Física. Investigación y práctica en el ámbito escolar*. Barcelona: Graó.
- Herranz-Sancho M and López-Pastor VM (2014) ¿Es viable llevar a cabo procesos de autoevaluación y evaluación compartida en educación física en la etapa de educación Primaria?: Un estudio de caso longitudinal. *Revista de Educación Física* 134: 29–36.
- Herrero-González D, López-Pastor VM and Manrique JC (2020) La evaluación formativa y compartida en contextos de aprendizaje cooperativo en educación física en Primaria. *Cultura, Ciencia y Deporte* 15(44): 213–222.
- Herrero-González D, Manrique JC and López-Pastor VM (2021) Incidencia de la formación inicial y permanente del profesorado en la aplicación de la evaluación formativa y compartida en educación física. *Retos* 41: 533–543.
- Hortigüela D, Palacios A and López Pastor VM (2018) The impact of formative and shared or co-assessment on the acquisition of transversal competences in higher education. *Assessment & Evaluation in Higher Education* 44(6): 933–945.
- Hortigüela D and Pérez-Pueyo Á (2016) Perception of students in physical education classes in connection with other subjects. *Apunts* 123: 44–52.
- Hortigüela D, Pérez-Pueyo Á and Fernández-Río J (2020) Evaluación formativa y modelos pedagógicos: Modelo de responsabilidad personal y social y de autoconstrucción de materiales. *Revista Española de Educación Física y Deportes* 430: 23–41.
- Leirhaug PE and MacPhail A (2015) It's the other assessment that is the key': Three Norwegian physical education teachers' engagement (or not) with assessment for learning. *Sport, Education and Society* 20(5): 624–640.
- Leirhaug PE and Annerstedt C (2016) Assessing with new eyes? Assessment for learning in Norwegian physical education. *Physical Education and Sport Pedagogy* 21(6): 616–631.
- López-Pastor VM (1999) *Prácticas de evaluación en Educación Física: Estudio de casos en Primaria, Secundaria y Formación del Profesorado*. Valladolid: Secretariado de publicaciones e intercambio editorial Universidad de Valladolid.
- López-Pastor VM (ed.) (2004) *La Educación Física en Educación Infantil: Una propuesta y algunas experiencias*. Buenos Aires: Miño y Dávila.
- López-Pastor VM (ed.) (2006) *La evaluación en Educación Física. Revisión de modelos tradicionales y planteamiento de una alternativa. La Evaluación Formativa y Compartida*. Buenos Aires: Miño y Dávila.
- López-Pastor VM (2008) Implementing a formative and shared assessment system in higher education teaching. *European Journal of Teacher Education* 31(3): 293–311.
- López-Pastor VM (ed) (2009) *Evaluación Formativa y Compartida en Educación Superior: Propuestas, técnicas, instrumentos y experiencias*. Madrid: Narcea.
- López-Pastor VM and Jiménez-Cobos B (1994) Una experiencia de autoevaluación en educación física. *Revista Española de Educación Física y Deporte* 4: 30–35.

- López-Pastor VM, Kirk D, Lorente-Catalán E, et al. (2013) Alternative assessment in physical education: A review of international literature. *Sport, Education & Society* 18(1): 57–76.
- López-Pastor VM, Molina M, Pascual C, et al. (2020) La importancia de utilizar la evaluación formativa y compartida en la formación inicial del profesorado de educación física: Los proyectos de aprendizaje tutorado como ejemplo de buena práctica. *Retos* 37: 620–627.
- López-Pastor VM, Monjas R, Manrique JC, et al. (2008) Implicaciones de la evaluación en los enfoques de educación física cooperativa. El papel de la evaluación formativa y compartida en la necesaria búsqueda de coherencia. *Cultura y Educación* 20(4): 457–477.
- López-Pastor VM and Pérez-Pueyo Á (2017) *Evaluación Formativa y Compartida en educación: Experiencias de éxito en todas las etapas educativas*. León: Universidad de León.
- López-Pastor VM, Pérez-Pueyo Á, Barba JJ, et al. (2016) Percepción del alumnado sobre la utilización de una escala graduada para la autoevaluación y coevaluación de trabajos escritos en la formación inicial del profesorado de educación física (FIPEF). *Cultura, Ciencia y Deporte* 11(31): 37–50.
- Lorente-Catalán E (2008) Estimular la responsabilidad y la iniciativa: Autogestión en educación física. *Apunts* 92: 26–34.
- Lorente-Catalán E and Kirk D (2013) Alternative democratic assessment in PETE: An action-research study exploring risks, challenges and solutions. *Sport, Education and Society* 18(1): 77–96.
- Lorente-Catalán E, López-Pastor VM and Kirk D (2018) La evaluación participativa en la formación inicial del profesorado. Un caso sobre su utilización en las primeras experiencias profesionales. In: Lorente-Catalán E and Martos D (eds) *Educación Física y Pedagogía Crítica. Propuestas Para la Transformación Personal y Social*. Lleida: Universidad de Lleida, 193–214.
- Manrique JC, López-Pastor VM, Monjas R, et al. (2010) El potencial de los proyectos de aprendizaje tutorado y los sistemas de evaluación formativa en la mejora de la autonomía del alumnado. Una experiencia interdisciplinar en formación inicial del profesorado. *Revista Española de Educación Física y Deportes* 14: 39–57.
- Martínez-Mínguez L (2016) Proyectos de aprendizaje tutorados y autoevaluación de competencias profesionales en la formación inicial del profesorado. *Retos* 29: 242–250.
- Martínez-Muñoz LF, Castejón FJ and Santos-Pastor ML (2012) Diferentes percepciones sobre evaluación formativa entre profesorado y alumnado en formación inicial en educación física. *Revista Electrónica Interuniversitaria de Formación del Profesorado* 15(4): 57–67. <https://revistas.um.es/reifop/article/view/174811>
- Martínez-Muñoz LF, Santos-Pastor ML and Castejón FJ (2017) Percepciones de alumnado y profesorado en educación superior sobre la evaluación en formación inicial en educación física. *Retos* 32: 76–81.
- Martos D, Usabiaga O and Valencia A (2017) Students' perception on formative and shared assessment: Connecting two universities through the blogosphere. *Journal of New Approaches in Educational Research* 6(1): 64–70.
- Molina M and López-Pastor VM (2019) ¿Evalúo cómo me evaluaron en la facultad? Transferencia de la evaluación formativa y compartida vivida durante la formación inicial del profesorado a la práctica como docente. *Revista Iberoamericana de Evaluación Educativa* 12(1): 85–101.
- Moreno JA, Vera JA and Cervelló E (2006) Evaluación participativa y responsabilidad en educación física. *Revista de Educación* 340: 731–754.
- Moura A, Graça A, MacPhail A, et al. (2021) Aligning the principles of assessment for learning to learning in physical education: A review of literature. *Physical Education and Sport Pedagogy* 26(4): 388–401.
- Navarro V and Jiménez F (2012) La mejora en la evaluación formativa de maestros de educación física través de un instrumento de metaevaluación didáctica. *Revista Internacional de Ciencias del Deporte* 27(8): 63–79.
- Ní Chróinín D and Cosgrave C (2013) Implementing formative assessment in primary physical education: Teacher perspectives and experiences. *Physical Education and Sport Pedagogy* 18(2): 219–233.
- Penney D, Brooker R, Hay P, et al. (2009) Curriculum, pedagogy and assessment: Three message systems of schooling and dimensions of quality physical education. *Sport, Education and Society* 14(4): 421–442.
- Pérez-Pueyo Á (2010) *Estilo Actitudinal. Una propuesta metodológica basada en las actitudes*. León: ALPE.

- Pérez-Pueyo Á, Hortigüela D and Fernández-Río J (2020) Evaluación formativa y modelos pedagógicos: Estilo actitudinal, aprendizaje cooperativo, modelo comprensivo y educación deportiva. *Revista Española de Educación Física y Deportes* 428: 47–66.
- Pérez-Pueyo Á, Hortigüela D, Hernando A, et al. (2021) The attitudinal style as pedagogical model in physical education. *International Journal of Environmental Research and Public Health* 18(2): 374.
- Petticrew M and Roberts H (2006) *Systematic reviews in the social sciences. A practical guide*. Oxford: Blackwell Publishing.
- Romero MR, Castejón FJ, López-Pastor VM, et al. (2017) Formative assessment, communicative competencies and ICT in teachers training. *Comunicar* 15(52): 73–82.
- Santos-Guerra MÁ (1993) *La evaluación: Un proceso de diálogo, comprensión y mejora*. Málaga: Ediciones Aljibe.
- Tolgfors B (2019) Transformative assessment in physical education. *European Physical Education Review* 25(4): 1211–1225.

Author biographies

Diego Herrero-González is a PE teacher in primary in Castilla y León (Spain). His teaching and research interests focus on formative assessment, shared assessment, PE and cooperative learning.

Víctor M. López-Pastor is a professor at the Faculty of Education of Segovia (University of Valladolid) in the Department of Didactics of Musical, Plastic and Physical Education. His teaching and research interests focus on formative assessment, shared assessment, PE, teacher education and action-research.

Juan Carlos Manrique-Arribas is a professor at the Faculty of Education of Segovia (University of Valladolid) in the Department of Didactics of Musical, Plastic and Physical Education. His teaching and research interests focus on formative assessment, PE and teacher education.

André Moura, PhD, is a teaching assistant at the Department of Physical Education and Sport Sciences, University of Limerick, Ireland. André's teaching and research interests focus on teaching, learning, curriculum, assessment for learning, and team sports within PE and PETE.