

Impact of a Feedback Program on the Accuracy and Quality of Feedback used by a Secondary Physical Education Teacher*

Incidencia de un programa de retroalimentación en la precisión y calidad de la retroalimentación utilizada por un profesor de Educación Física en secundaria

Incidência de um programa de feedback na precisão e na qualidade do feedback utilizado por um professor de educação física no ensino médio

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ABSTRACT

This study aimed to evaluate the consistency between the type of feedback that a secondary school physical education teacher perceives and the feedback he or she provides, as well as the quality of the feedback. The study was conducted with one physical education teacher at a public secondary school in southeastern Spain. A mixed-methods action research design was used to record the teacher's feedback during nine sessions. The results showed that the teacher provided feedback that largely contradicted recommendations from the literature. There was also a significant discrepancy between the teacher's performance and their self-perception. However, as the program progressed, the differences between perceived and actual performance diminished. Providing teachers with tools to improve their self-perception positively influences how they perceive themselves and promotes closer alignment between the type of feedback and the recommendations.

KEYWORDS: action research, feedback, physical education, professional development, secondary school, self-perception.

RESUMEN

El objetivo de este estudio fue evaluar la coherencia entre el tipo de retroalimentación que percibe un profesor de Educación Física de secundaria y la que proporciona, así como su calidad. El estudio se llevó a cabo con un profesor de Educación Física de un instituto de enseñanza secundaria pública del sureste de España. Se utilizó un diseño de investigación-acción con métodos mixtos para registrar la retroalimentación del profesor durante nueve sesiones. Los resultados mostraron que la retroalimentación del profesor contradecía en gran medida las recomendaciones de la literatura especializada. También se observó una discrepancia significativa entre el rendimiento del profesor y su autopercepción. No obstante, conforme avanzaba el programa, la disparidad entre el rendimiento percibido y el real fue disminuyendo. Proporcionar a los profesores herramientas para mejorar su autopercepción influye positivamente en la forma en que se perciben a sí mismos y fomenta una mayor coherencia en el tipo de retroalimentación.

PALABRAS CLAVE: investigación-acción, retroalimentación, educación física, desarrollo profesional, escuela secundaria, autopercepción.

RESUMO

O estudo teve como objetivo avaliar a consistência entre o tipo de feedback percebido por um professor de educação física do ensino médio e o tipo de feedback por ele fornecido, bem como sua qualidade. O estudo foi realizado com um professor de educação física de uma escola secundária pública no sudeste da Espanha. Para registrar seu feedback durante nove sessões, utilizou-se um projeto de pesquisa-ação com métodos mistos. Os resultados mostraram que o professor forneceu um feedback que, em grande parte, contradizia as recomendações da literatura. Também houve

uma discrepância significativa entre o desempenho do professor e sua autopercepção. No entanto, à medida que o programa avançava, a diferença entre o desempenho percebido e o real foi diminuindo. Ao fornecer aos professores ferramentas para aprimorar sua autoconsciência, é possível influenciar positivamente a forma como eles se veem, promovendo um alinhamento mais próximo entre o tipo de feedback e as recomendações.

PALAVRAS-CHAVE: pesquisa-ação, feedback, educação física, desenvolvimento profissional, ensino médio, autopercepção.

INTRODUCTION

Feedback is defined as the information provided to a student during or after a motor action to influence their current or future performance and promote effective high-quality learning (Díaz, 2005, cited by Mamani-Ramos, 2020), as well as to close the gap between current and desired learning (Hattie & Timperley, 2007).

As recommended by the literature, appropriate feedback positively influences the quality of teaching and learning (Boud & Molloy, 2013; Koka & Hein, 2005), increases student motivation and autonomy (Hattie & Clarke, 2020; Huéscar & Moreno Murcia, 2012), and improves the classroom climate (Francés-Parra, 2021).

Currently, many teaching and learning processes are still based on traditional assessment. Traditional assessment has several disadvantages. For example, it disregards the important role of students in their own learning process and provides little encouragement for using feedback (Berlanga Ramírez & Juárez-Hernández, 2020).

Consequently, a formative assessment is proposed in which feedback is one of the determining elements (Mamani-Ramos, 2016). According to the scientific literature (Mamani-Ramos, 2020; Ortega Villa et al., 2022; Palao Andrés et al., 2011; Viciano, 2003), feedback can be classified as follows:

1. Direction: Individual and group.
2. Intention: Evaluative, descriptive, explanatory, prescriptive, interrogative, and affective.
3. Emotional orientation: Positive, negative, or neutral.
4. Autonomy: Autonomy-supportive, neutral, or controlling.
5. Values: Value-providing or non-value-providing.

Recommendations in the scientific literature regarding feedback in curricular physical education (PE) tend to favor positive feedback, as it improves students' overall perception of PE (Ferrer Pardo, 2023; Viciania, 2003). Feedback should be given individually (Boud and Molloy, 2013) so it can be adapted to each person's needs, be clear and specific (Tourón, 2015); and depend on the intention. Feedback should be descriptive and affective so students can learn more meaningfully and develop a favorable attitude toward physical activity (Mamani-Ramos, 2020).

Furthermore, research affirms that adequate feedback should support the performer's autonomy so that their practice is more positive (Hernández Rivero et al., 2021), while also transmitting values. This is one of the main objectives in sports (Unesco, 2019).

The results of previous studies regarding teachers' actions concerning the type of feedback are mixed. In terms of emotional orientation, teachers most frequently used negative feedback, which can lead to an unfavorable classroom climate, poor teacher-teacher relationships, and decreased student satisfaction (Carvajal Garcías et al., 2014).

Other studies, however, found that teachers used positive feedback more frequently, thereby increasing student motivation (Campean et al., 2024; Lee et al., 2024; Mackinney, R., 2025; Moreno-Murcia et al., 2013).

From a management perspective, previous studies have obtained conflicting results. Teachers use group feedback more frequently (Boud & Molloy, 2013), while individual feedback is higher in percentage terms (Chillón Garzón & Delgado Noguera, 2012).

Regarding intention, teachers focused on students' actions and primarily provided evaluative and prescriptive feedback (Fernández & González, 2019). Different studies (Labuena Capilla, 2016) have observed the greater use of evaluative feedback by teachers, including affective feedback.

From an autonomy perspective, studies have found that teachers generally support student autonomy (Aibar et al., 2015; Huéscar & Moreno-Murcia, 2012). However, these and other studies analyzing teacher provided autonomy rely on self-reports of perception from either teachers or students, so the feedback each teacher provides is not assessed. Regarding the transmission of values, teachers referred to them infrequently (Gutiérrez Sánchez et al., 2019).

The quality of feedback is influenced by teachers' training and their actions while teaching (Millar et al., 2011). Therefore, it is important for teachers to understand the characteristics of effective feedback (Hathiramani Ishwardas, 2022), such as the different types and when to use them (Jiménez Segura, 2015).

However, it has been claimed that many teachers lack the skills and tools necessary to provide quality, effective feedback (Canabal & Margalef, 2017) and that they are unaware of the influence their verbal behavior has on students' learning (Purdy & Jones, 2011).

This problem underscores the significance of self-evaluation as a means for teachers to analyze their actions, recognize their strengths and limitations, and improve their teaching methods (Suárez et al., 2008). Teacher self-perception is a key factor in achieving quality teaching (Daoud, 2007).

For self-assessment to be adequate, teachers must carry it out as objectively as possible (Ross & Bruce, 2007) and reflect on the gathered information (Álvarez, 2022). Furthermore, teachers' self-assessment cannot be carried out properly if teachers are not aware of their great responsibility for their students teaching-learning process and do not change their view of assessment, *i.e.*, their evaluative paradigm (Ayzum Echeverría, 2011).

Teachers can focus their self-evaluation on various aspects, such as the content they teach, their teaching methods, the development of the sessions and/or evaluations, and their personal behavior, attitude, and interaction with students (Fuentes Medina & Herrero Sánchez, 1999; Martínez-Izaguirre et al, 2018). Self-evaluation can also be conducted using different instruments (Canabal & Margalef, 2017; Moreno Romero & Rochera Villach, 2022) including:

1. Checklists and rating scales used to determine which items should or should not be selected based on their appearance in practice.
2. Self-reports, and reports and observations from outsiders immersed in the teaching-learning process, such as students.
3. A teacher's diary where sessions, sensations and observations can be recorded and reviewed later.
4. Audio and/or video recordings made during class implementation and analyzed afterward (De la Fuente et al., 2015).

The self-assessment methods mentioned above do not have a fixed model. This enables teachers to combine different strategies when carrying out the assessment process. Some studies have implemented intervention programs for teachers or coaches to alter the feedback they provide to their participants.

Jiménez Segura (2015) carried out a self-evaluation using audio recordings and observations from two individuals outside the process. These individuals provided report on what occurred during each session. By visualizing and comparing the report with the recordings, he was able to modify the type of feedback, providing more adequate feedback adapted to scientific recommendations in the last sessions.

Andrew et al. (2024) took a systematic approach to observing the intervention before and after a verbal information workshop, which resulted in positive changes in the type of feedback provided.

This study aimed to evaluate the consistency between the type of feedback that a secondary school physical education teacher perceives and the feedback he or she provides, as well as the quality of the feedback. The study also aimed to provide teachers with the tools to modify and improve their perception of their feedback.

METHODOLOGY

Sample

The study sample consisted of a physical education teacher from a public secondary school in Murcia. The teacher had 18 years of teaching experience, and, during the school year in which the research was conducted, he taught four years of compulsory secondary education (ESO), two years of the first year of baccalaureate, and one year of basic vocational training.

Before the research began, the teacher's consent was requested, in accordance with the principles of the Declaration of Helsinki. The decision to focus on a single case reflects the exploratory nature of the study, which prioritizes depth over breadth.

Procedure

All feedback ($n = 701$) provided by the teacher during each course session was recorded. Data collection took place over nine sessions over the course of four weeks. The recordings were distributed across five sessions with 12–13-year-olds (2ndESO) and addressed orientation and pickleball contents. There were also two two-hour sessions with 13–14-year-olds (3rdESO): The first session focused on target and bullseye activities, and the second session focused on orientation.

Finally, the last two two-hour sessions were conducted with 14–15-year-olds (4thESO). One session was part of orienteering unit, and the other was part of the rugby tag unit.

Variable

The main variable analyzed was the type of feedback provided by the teacher. The analysis included two components. First, an analysis of the teacher's actions during his classes through recordings, and second, the teacher's completion of a self-evaluation to assess his perception of the feedback he provided.

The secondary variable refers to the quality of the feedback provided. It refers to the concordance of the results with the recommendations of scientific literature. In this way, the report obtained by the teacher will address what he or she does and believes he or she does, whether or not the feedback is of high quality, and how it can be improved if necessary.

Data analysis

To analyze the feedback that the teacher provided, a microphone and a recorder were attached to the teacher during each session. The feedback was recorded and analyzed using an *ad-hoc* recording sheet according to five variables. A panel of experts previously tested the instrument to ensure its content and validity.

To evaluate his perception of the feedback, the teacher completed a self-report at the end of each class. The self-report contained 18 questions. The teacher recorded the date, the class group, and his or her perception of the frequency of each type of feedback described in Table 1, each type of feedback from 0 (none of the occasions) to 10 (all occasions).

A comparative report was prepared using the data obtained through the recordings and the teacher's self-evaluation self-report. The report was provided to the teacher every two days of recording to encourage reflection, for a total of three reports. The feedback was recorded, classified and analyzed using Excel and an *ad-hoc* recording sheet, as well as descriptive techniques such as mean, standard deviation, frequencies, and percentages.

The observers were trained using the methodology proposed by Losada & Manolov (2014). They achieved intra- and interobserver reliability values above 0.90, as measured by Cohen's Kappa coefficient (Altman, 1991).

Table 1. Variables of the study recorded on the sheet

Variable	Category	Description	Example
Based on direction	Individual	Directed to a specific player.	"You performed that move well."
	Group	Directed to the group.	"We should move the ball faster."
Based on intention	Evaluative	It provides a qualitative estimate of the performance, along with justification.	"The shot was well-timed because the defender was far away, and the basket was close."
	Descriptive	It involves providing information about the execution of a movement or action.	"You were off-balance when you shot."
	Explanatory	It seeks to provide empirical reasons for execution errors. It explains the causes. It justifies these causes. Biomechanical and psychological factors come into play.	"When you hit the ball, your body is too far away from it, and you don't put enough force behind it."
	Prescriptive	It provides information on how to perform the next execution.	"You have to change defenders after a direct block!"
	Interrogative	It involves asking players questions about their performances to encourage reflection and awareness.	"Where did your direct opponent pass the direct block?"
	Emotional	It refers to emotional information and relates to the emotional state of the player.	"Well done, Gonzalo. You are so good!"

Type	Positive	It focuses on the success.	"Good shot!"
	Negative	It focuses on the error.	"Don't be selfish. Pass the ball to your teammate."
	Neutral	It does not focus on neither the error or the effort.	
Autonomy	Support	It supports autonomy and empathy.	The coach's questions and reflections.
	Neutral		
	Controller	Providing very direct instructions does not encourage autonomy.	"Stop taking that shot."
Values		If the trainer alludes to the values of respect and fair play.	"Don't yell at the referee."

Note. Own elaboration.

RESULTS

Throughout nine sessions, the teacher provided 701 pieces of feedback and completed three self-reports (Table 2). The results are divided into two tables. Table 1 shows the pre-phase results, before the first report. Table 3 shows the post-phase one results, after the first report, and the post-phase two results, after the second report.

Table 2. Average percentage of feedback occurrence in the pre-test

Type	Category	Pre-test		
		Observed	Opinion	Difference
Direction	Individual	27.5 %	75 %	47.5 %
	Group	77.5 %	25 %	52.5 %
Intention	Evaluative	10.5 %	30 %	19.5 %
	Descriptive	1 %	40 %	39 %
	Explanatory	0 %	15 %	15 %
	Prescriptive	26.5 %	40 %	13.5 %
	Interrogative	46.5 %	35 %	11.5 %
	Affective	14 %	50 %	36 %
Emotional orientation	Positive	17.5 %	60 %	42.5 %
	Negative	22 %	20 %	2 %
	Neutral	60 %	35 %	25 %
Autonomy	Support	28 %	45 %	19 %
	Neutral	31 %	40 %	24 %
	Controller	41 %	35 %	13 %
Values	Provide	0 %	30 %	30 %
	Not provide	100 %	20 %	80 %

Note. Own elaboration.

Table 3. Average percentage of feedback occurrence in the post-test

Type	Category	Post-phase one			Post-phase two		
		Observed	Opinion	Difference	Observed	Opinion	Difference
Direction	Individual	21.75 %	40 %	21.3 %	57.6 %	43,3 %	14.3 %
	Group	81.3 %	72.5 %	12.3 %	42.3 %	66.7 %	24.3 %
Intention	Evaluative	13.8 %	42.5 %	28.8 %	18.7 %	63.3 %	44.7 %
	Descriptive	3 %	45 %	42 %	5 %	40 %	35 %
	Explanatory	2.8 %	47.5 %	44.8 %	0 %	36.7 %	36.7 %
	Prescriptive	31.3 %	35 %	22.8 %	40 %	36.7 %	16.7 %
	Interrogative	31 %	62,5 %	31.5 %	17.7 %	33.3 %	15.7 %
	Affective	21.3 %	32.5 %	14.3 %	18.7 %	40 %	21.3 %
Emotional orientation	Positive	31 %	47.5 %	16.5 %	29.3 %	50 %	20.7 %
	Negative	31 %	15 %	4.3 %	22 %	26.7 %	7.3 %
	Neutral	51.25 %	15 %	36.25 %	48.7 %	33.3 %	15.3 %
Autonomy	Support	38,8 %	27,5 %	15,8 %	33.3 %	46.7 %	13.3 %
	Neutral	12 %	27.5 %	15.5 %	5.7 %	36.7 %	31 %
	Controller	49.3 %	37.8 %	21.3 %	61.3 %	30 %	31.3 %
Values	Provide	0.5 %	10 %	9.5 %	0 %	13.3 %	13.3 %
	Not provide	99.5 %	10 %	89.5 %	100 %	13.3 %	86.7 %

Note. Own elaboration.

These data are equivalent to the percentages obtained in each session of each phase. They classify the frequency with which the teacher uses of each feedback, according to the teacher's perception, and the percentage difference between the two aspects.

The results regarding the use of feedback in the pre-phase showed that more than 75 % of the time, group feedback was used, while the teacher considered that he or she used this type of feedback one out of four times.

In the post-phase one group, feedback comprises about 80 % of the feedback given, and the teacher's perception reflects an expectation of receiving this type of feedback at a rate of about 73 %. In the post-phase two group, the frequency of group feedback decreased, with individual feedback accounting for more than 50 % of the feedback. In this phase, the teacher considered more than half of the feedback provided to be group feedback.

Regarding the intention of feedback, a predominance of interrogative and prescriptive feedback was determined in the pre-report phase. The teacher considered that he used each type of feedback 30 %-50 % of the time, except explanatory feedback. In post-phase one, interrogative and prescriptive feedback predominated, accounting for 31 % each, while affective feedback accounted for 21 %.

The teacher used all types of feedback similarly, with interrogative feedback accounting for over 60 % of the total. In the last phase, the teacher primarily used prescriptive feedback, accounting for nearly half of the total feedback. However, he or she believed that all types of feedback were used equally, with evaluative feedback accounting for around 60 % of the total time.

Regarding emotional orientation, the results showed that, in the pre-phase, more than half of the teacher's feedback provided was neutral (60 %), though the teacher considered that this predominance to be positive feedback. In the post-phase one and post-phase two, the percentage of opinions decreased to about 50 %. Feedback covered a larger percentage, and about 50 % of feedback was neutral.

Regarding autonomy, the frequency percentage revealed a predominance of controlling feedback (41 %) in the pre-report phase. This percentage increased to 50 % in the post-phase one and to 60 % in post-phase two. The teacher perception questionnaire showed equal usage of the three types of feedback in each phase.

Finally, the results from the value perspective showed that the teacher's feedback in all phases rarely referred to value terms. However, the teacher considered that, in the pre-phase, 30 % of the feedback conveyed values, a percentage that decreased during the intervention and never exceeded 20 %.

DISCUSSION

This study aimed to evaluate the consistency between the type of feedback perceived by a secondary school physical education teacher and the feedback they provide, as well as the quality of the feedback. The study also aimed to provide teachers with tools to modify and improve their perception of their feedback, to promote a more realistic perception, if necessary.

The feedback direction was analyzed from two perspectives: individual and group. Regarding individual feedback, the difference between the feedback given by the teacher and his or her opinions decreased progressively as the phases progressed. This is a positive aspect because it shows that, as the intervention progresses, the teacher became more realistic about his or her behavior. This was mostly promoted by visualizing the comparative report of what he or she did versus what he or she thought he or she did.

Regarding group feedback, the difference between the teacher's performance and his or her self-evaluation was more variable, indicating that the report has a favorable influence during the post-phase one. However, it does not decrease the percentage from post-phase one to post-phase two.

The results regarding intention were inconsistent, suggesting that viewing the report does not significantly influence this variable. This may be due to the difficulty of distinguishing between the types of feedback. Nevertheless, a percentage decrease in the difference between descriptive and interrogative feedback was observed, reflecting an improvement in teacher's perception of the types of feedback to provide.

The predominant use of one type of feedback over the other, depending on the intended outcome, changes as the intervention progresses and the reports are visualized. Nevertheless, the results are consistent with those of previous studies (Fernández & González, 2019; Labuena Capilla, 2016; Mamani-Ramos, 2020).

Regarding the emotional orientation of the feedback, the results showed a notable decrease in the percentage difference between the teacher's performance and his or her opinions for the three variables (positive, negative, and neutral) between the beginning and the end of the intervention. Thus, the positive influence of the report on the teacher's feedback can be determined. However, the significant use of neutral feedback does not align with the recommendations of the scientific literature (Ferrer Pardo, 2023).

The results regarding autonomy differ from those obtained in previous variables, where the difference tended to decrease in the initial phase. This tendency is only observed in supportive feedback because the teacher's perception progressively moves away from reality during the intervention compared to controlling and neutral feedback. Additionally, controlling feedback is used more frequently, which is not in accordance with literature on how feedback should be given.

The last variable analyzed, feedback values, showed that the teacher's improved his or her perception of feedback that provides value through the intervention and visualization of the report. However, the percentage difference between the teacher's performance and his or her opinions on feedback that does not provide value remains high. The teacher mostly provided feedback that did not add value and did not conform to recommendations in scientific literature.

CONCLUSION

The teacher's visualization of a comparative report between his or her performance and his or her opinions positively influenced his or her perception of feedback, minimizing the difference between the two.

Furthermore, this tool enabled the teacher to consciously align his or her feedback with scientific recommendations while maintaining awareness of the feedback provided.

Applying the study protocol to future studies could improve the teaching and learning processes, as well as related aspects and teaching interventions.

Thus, it is proposed that teachers take advantage of the simplicity of this system, either independently or with the help of outsiders immersed in the teaching-learning process, in both the specific field of physical education and other subjects.

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