STUDIA UBB EDUCATIO ARTIS GYMN., LXX, Special Issue 1, 2025, pp. 67-78
(RECOMMENDED CITATION)
DOI: 10.24193/subbeag.70.sp.iss.1.05

THE IMPACT OF PEER ASSESSMENT ON LEARNING MOTIVATION AMONG PHYSICAL EDUCATION STUDENTS

Andrei-Iasmin BĂLOI[1], Gabriela-Ioana DOMILESCU[2], Bogdan ALMĂJAN[3*]

ABSTRACT. This study explores the impact of peer assessment on learning motivation among students majoring in Physical Education and Sport. Conducted using a quasi-experimental design with pre-test and post-test evaluations, the research involved two groups (experimental and control) and measured intrinsic motivation, extrinsic motivation, amotivation, and perceptions of peer assessment. The findings revealed no statistically significant differences between the groups after the intervention. However, both groups exhibited a significant decline in intrinsic and extrinsic motivation, indicating a general decrease in motivation during the intervention period. The discussion highlights that, although existing literature supports the potential of peer assessment to enhance motivation, its effectiveness depends on contextual factors such as implementation method, perceived fairness, and motivational climate. The study underscores important theoretical and practical implications for integrating peer assessment in physical education, suggesting future research should focus on randomized designs, more diverse samples, and the long-term effects of peer assessment on learning motivation.

Keywords*:* peer assessment, learning motivation, intrinsic motivation, extrinsic motivation, higher education.

[1] Phd, Faculty of Physical Education and Sport, West University of Timisoara, 300223, Romania, email: andrei.baloi00@e-uvt.ro
[2] Lecturer, Faculty of Physical Education and Sport, West University of Timisoara, 300223, Romania, email: gabriela.domilescu@e-uvt.ro
[3] Professor, Faculty of Physical Education and Sport, West University of Timisoara, 300223, Romania
[*] Corresponding author: almajan.bogdan@e-uvt.ro

INTRODUCTION

In the context of higher education, developing effective methods for assessing academic and practical performance represents a constant challenge. Peer assessment, as an alternative form of evaluation, has gained increasing attention due to its impact on active learning, self-reflection, and student collaboration. This method requires the active involvement of students in the evaluation process, which can influence both their perception of their own competences and their motivation for learning. In the field of physical education, peer assessment takes on particular importance, given the practical nature of the disciplines studied and the necessity of developing technical and pedagogical skills (Groeneveld, Vennekens, & Aerts, 2020) Nevertheless, the effective application of this method raises important questions regarding the objectivity of the evaluation process, its effects on students' self-confidence, and its influence on motivation for learning. Borgen and Hallås (2024) explore these aspects by analyzing how physical education is addressed in the OECD's 2019 report, Making Physical Education Dynamic and Inclusive for 2030. Their research focuses on identifying and discussing the problems highlighted in the report as well as the proposed solutions for the future of physical education. The authors emphasize that physical education is viewed as a response to societal issues related to global physical activity, health, and academic performance. The OECD's 2019 report highlights the role of physical education as a strategic response to global challenges associated with health, sedentary lifestyles, and declining academic achievement, promoting a modern and inclusive vision of the discipline. In this regard, the OECD proposes the standardization of the physical education curriculum at the international level, focusing on competence development and the use of common performance indicators to facilitate comparability across different educational systems.

However, this approach has been criticized by researchers such as Borgen and Hallås (2024), who draw attention to the risks of excessive uniformity, showing that top-down solutions fail to reflect local realities and overlook traditional values and knowledge in physical education. In this sense, the authors stress the need for a balance between global guidelines and contextual needs, advocating for a physical education system adapted to the cultural, social, and educational specificities of each environment. The central issue identified is the reliance of teaching and learning on local solutions, in contrast with the OECD's tendency to promote globally standardized approaches.

Description of Concepts

Assessment is a systematic and continuous process through which information regarding learning outcomes is collected, analyzed, and interpreted, with the purpose of evaluating student performance and facilitating the educational process. Assessment represents an essential component of the educational process, alongside teaching and learning. It is a systematic, ongoing, and reflective process that provides relevant information about students' level of preparedness, the effectiveness of teaching strategies, and the overall quality of the educational act. Through assessment, teachers can identify both student progress and the difficulties they encounter, thereby being able to adapt the instructional process to the real needs of the group. In education, assessment can be applied through various forms and strategies, depending on the intended purpose: diagnosing students' initial knowledge, monitoring progress, providing formative feedback, or certifying final competences. Effective application of assessment requires choosing appropriate methods (tests, portfolios, projects, rubrics, peer assessment) and integrating them into the teaching–learning process in such a way as to support students' progress and motivation. More than a simple measurement of performance, assessment becomes a tool for active learning, guiding both teachers and students in making educational decisions (Brookhart, 2021).

Toledo, Latorre, and Vázquez (2023) state that peer assessment is an evaluative approach in which students or participants are involved in the reciprocal evaluation of their peers' performances, competences, or work. This process encourages the development of critical skills, reflective thinking, and self-assessment, thereby contributing to constructive feedback that supports both individual and collaborative learning. Through peer assessment, students learn to give and receive feedback, thus developing essential skills for continuous education. The authors define peer assessment as an interactive process in which students analyze each other's activities or work, thereby contributing to the improvement of both individual and group outcomes. They emphasize that peer assessment enhances responsibility for learning and fosters the development of social and collaborative competences. According to Howard, Bureau, Guay, et al. (2021), students' motivation is essential for achieving positive educational outcomes, highlighting the importance of understanding and promoting motivational factors in the academic environment. Students' academic motivation is a key factor that influences their performance and success in higher education.

In the study conducted by Solomon and Munsell (2024), intrinsic motivation, defined as the desire to learn for personal satisfaction and interest in the subject, is closely related to self-confidence and higher academic achievement.

Hypotheses

H1. At the pre-test stage, there will be no significant differences between the experimental group and the control group across all dimensions of learning motivation.

H2. At the pre-test stage, there will be no significant differences between the experimental group and the control group across all dimensions of peer assessment.

H3. There is a significant difference in the results on the dimension of learning motivation from pre-test to post-test within the experimental group.

H4. Physical education students in the experimental group will display significantly higher scores on the dimension of peer assessment in the post-test compared to students in the control group.

METHODOLOGY

Research Design / Variables

The present study uses a quasi-experimental design, with an experimental group and a control group, and two measurement points (pre-test and post-test). The groups were not established through randomization. The variables measured in this study were the following: peer assessment and motivation. Peer assessment, in the context of this study, holds significant importance since it allows students to identify their weaknesses and subsequently improve the quality of their teaching, expression, and even their ability to manage the subject matter itself. In this study, this variable is represented by a single dimension, measured through a questionnaire. Motivation is the second variable measured in this study, where the aim was to explore whether it can be improved through peer assessment. This variable consists of three dimensions, all of which were measured using a questionnaire.

Participants

The study sample consisted of second-year students majoring in Physical Education and Sport at the West University of Timișoara (N = 60). The participants were divided into two groups: Group 1, the experimental group (N = 30), and Group 2, the control group (N = 30).

In the experimental group, 53.3% of the students were female, and 46.7% were male, indicating a relatively balanced gender distribution. In the control group, there was a significant predominance of male students (70%), while female students accounted for only 30%.

Table 1. Demographic characteristics of students

Characteristic	Experimental (N = 30)	Control (N = 30)	Total (N=60)
Gender			
Female	16 (53.3%)	9 (30%)	25
Male	14 (46.7%)	21 (70%)	35
Group			
EFS Group 1	16 (53.3%)	9 (30%)	
EFS Group 2	14 (46.7%)	21 (70%)	

Note. N = number of participants

Instruments for Data Collection

Two questionnaires were used to measure both the impact of peer assessment and motivation for learning.

Effective Learning Strategy (ELS) Questionnaire - Used to measure the peer assessment variable. Designed to capture essential aspects such as individual contribution within the group, adherence to deadlines, and the ability to collaborate effectively. Contains 8 items, each rated on a **5**-point Likert scale (1 = very low to 5 = very high), evaluating the degree of agreement with given statements. Example item: "How do you evaluate your colleague's contribution within the group project?"

Physical Education Motivation Scale (PEMS) - Developed to measure different forms of student motivation in the context of physical education. Based on motivation theories, it evaluates intrinsic motivation, extrinsic motivation, and amotivation among students participating in physical education activities. Each dimension is measured using a 5-point Likert scale (from "Strongly disagree" to "Strongly agree"). Example items: Intrinsic motivation: "I participate in physical education because it is interesting." Extrinsic motivation: "I try to do well in physical education so that the teacher will consider me a good student." Amotivation: "I don't see the point of participating in physical education."

RESULTS

Presentation of Descriptive Data

Internal Consistency Analysis – The table below reports the Cronbach's alpha values for each dimension of the instruments administered to the students, for both groups, at the pre-test and post-test stages.

Table 2. Internal Consistency Analysis

Questionnaire / Dimension	Moment	No. of Items	Alpha Cronbach α	
			Experimental Group	Control Group
PEMS – Physical Education Motivation Scale				
Intrinsic Motivation	pre-test	3	0.843	0.825
	post-test	3	0.874	0.833
Extrinsic Motivation	pre-test	3	0.798	0.776
	post-test		0.815	0.780
Amotivation	pre-test	3	0.735	0.747
	post-test		0.706	0.721
Peer Evaluation Questionnaire				
Peer Evaluation in Group	pre-test	8	0.881	0.740
	post-test	8	0.912	0.762

To verify the reliability of the instruments used in this study, Cronbach's alpha coefficient (α) was calculated to assess the internal consistency of the items within each dimension. The obtained values are presented in Table 2. Regarding the Physical Education Motivation Scale (PEMS), the internal consistency coefficients range from 0.706 to 0.874 in the experimental group and from 0.721 to 0.833 in the control group, indicating good to excellent internal consistency for the three dimensions—intrinsic motivation, extrinsic motivation, and amotivation both at the pre-test and post-test stages.

Table 3. Descriptive Data

Variables	Moment	Group				
			Experimental		Control	
		N	M	SD	M	SD
Intrinsic	pre-test	30	3.69	0.47	3.78	0.45
Motivation	pre-test	30	3.15	0.50	3.25	0.48
Extrinsic	pre-test	30	3.83	0.52	3.90	0.49
Motivation	pre-test	30	3.40	0.55	3.50	0.51
Amotivation	pre-test	30	2.59	0.58	2.55	0.57
	pre-test	30	2.82	0.56	2.75	0.55
Peer	pre-test	30	3.50	0.60	3.44	0.59
Evaluation	pre-test	30	3.52	0.62	3.60	0.55

Note. N = number of participants; M = mean; SD = standard deviation

In order to compare the two groups (experimental and control) regarding the variables of peer evaluation and motivation for learning at the pre-test stage, the assumptions required for applying the independent samples t-test were examined. The normality of the score distributions for each variable was tested using the Kolmogorov-Smirnov test, and the results indicated that the data were normally distributed in both the experimental and control groups for both variables, with p-values of 0.244. Additionally, to verify the equality of variances, Levene's Test was applied. Its results showed that the variances were approximately equal across the two groups for both peer evaluation and motivation for learning, with a p-value of 0.71. Given that these two assumptions were met, the independent samples t-test was applied at the pre-test stage to determine whether there were statistically significant differences between the two groups regarding peer evaluation and motivation for learning prior to the intervention.

Table 4. Independent Samples T-Test Results for Comparing the Experimental and Control Groups at Pre-Test

Dimension	Pre-test				t	p
	Experimental (*N = 30*)		Control (*N = 30*)			
	M	SD	M	SD		
Intrinsic Motivation	3,69	0,47	3,78	0,45	-0,76	0,449
Extrinsic Motivation	3,83	0,52	3,90	0,49	-0,54	0,592
Amotivation	2,59	0,58	2,55	0,57	0,27	0,787
Peer Evaluation	3,50	0,60	3,44	0,59	0,41	0,684

Note: N = number of participants; M = mean; SD = standard deviation; t = t-test statistic; p = significance level.

The independent samples t-test at pre-test showed no statistically significant differences between the experimental and control groups across all dimensions: intrinsic motivation ($t(58) = -0.76$, $p = .449$), extrinsic motivation ($t(58) = -0.54$, $p = .592$), amotivation ($t(58) = 0.27$, $p = .787$), and peer evaluation ($t(58) = 0.41$, $p = .684$). Both H1.1 and H1.2 are confirmed, indicating that the two groups started from a similar baseline for learning motivation and peer evaluation.

Table 5. Results of the Paired Samples T-Test for Comparing Pre-Test and Post-Test Scores Within Each Group

Dimension		Pre-test (N=30)		Post-test (N=30)		t	p	d
		M	SD	M	SD			
Intrinsic Motivation	Experimental	3.69	0.47	3.78	0.45	4.32	.001	1.11
	Control	3.69	0.47	3.78	0.45	4.42	.001	
Extrinsic Motivation	Experimental	3.83	0.52	3.90	0.49	3.12	.004	0.79
	Control	3.83	0.52	3.90	0.49	3.10	.004	
Amotivation	Experimental	2.59	0.58	2.55	0.57	1.56	.13	0.40
	Control	2.59	0.58	2.55	0.57	1.38	.18	
Peer Evaluation	Experimental	3.50	0.60	3.44	0.59	0.13	.89	0.03
	Control	3.50	0.60	3.44	0.59	1.09	.28	

Note. N = 30 for each group; M = mean; SD = standard deviation; t = t-value for paired samples (pre-test vs. post-test); p = significance level; d = effect size.

The paired-samples t-test showed significant changes from pre-test to post-test in the experimental group for intrinsic motivation ($t(29) = 4.32$, $p = .001$, $d = 1.11$) and extrinsic motivation ($t(29) = 3.12$, $p = .004$, $d = 0.79$), while amotivation and peer evaluation did not show significant changes. Therefore, hypothesis H3 is partially confirmed, as the intervention positively affected two of the three dimensions of learning motivation, without impacting peer evaluation.

Table 6. Independent Samples T-Test Results for Comparing the Experimental and Control Groups at Post-Test

Dimension	Pre-test (N=30)		Post-test (N=30)		t	p	d
	M	SD	M	SD			
Intrinsic Motivation	3,15	0,50	3.25	0.48	-0.79	.433	-0.20
Extrinsic Motivation	3,40	0,55	3.50	0.51	-0.73	.468	-0.19
Amotivation	2,82	0,56	2.75	0.55	0.49	.627	0.13
Peer Evaluation	3,52	0,62	3.60	0.55	-0,43	.599	-0.14

Note: N = number of participants; M = mean; SD = standard deviation; t = t-test value; p = significance level; d = effect size

The results of the independent samples t-test at post-test indicate no statistically significant differences between the experimental and control groups across all four dimensions: intrinsic motivation, extrinsic motivation, amotivation, and peer evaluation. Specifically, the differences in scores between the groups were minimal and associated with very small effect sizes (d ranged from -0.20 to 0.13). Consequently, hypothesis H4, which predicted that students in the experimental group would achieve significantly higher scores in peer evaluation at post-test, is not supported.

DISCUSSION

The main objective of the study was to analyze the impact of peer evaluation on learning motivation among students majoring in Physical Education and Sports. The results indicate that, despite the implementation of peer evaluation in the experimental group, no statistically significant differences were observed between the experimental and control groups at post-test for any of the dimensions analyzed (intrinsic motivation, extrinsic motivation, amotivation, peer evaluation).

Therefore, it can be concluded that the implementation of peer evaluation, in the form and under the conditions applied in this study, did not have a positive impact on students' learning motivation. This finding does not support the hypothesis that involving students in the peer evaluation process leads to an increase in motivation, as initially assumed.

The results of our study on the influence of peer assessment on learning motivation among students majoring in Physical Education and Sports are consistent with the existing literature, which highlights the important role of active student involvement in the assessment process and group collaboration. Recent studies indicate that peer assessment and cooperative learning methods can support the development of both intrinsic and extrinsic motivation, although the effects may vary depending on the methodology applied and the educational context (Bores-García et al., 2020; Fernández-Espínola et al., 2020).

Bores-García et al. (2020) conducted a systematic review of peer assessment in physical education, emphasizing that this method facilitates the development of social and metacognitive skills, which are essential for increasing student engagement and motivation. Similarly, Fernández-Espínola et al. (2020) and Liu & Lipowski (2021) highlighted through meta-analyses the positive impact of cooperative learning on intrinsic motivation, supporting the idea that strategies involving peer assessment may have significant motivational potential in physical education.

On the other hand, Leyton Román et al. (2019) stressed the importance of student accountability within the assessment process to enhance satisfaction and motivation toward educational activities, which may explain the variability of results observed in different studies on peer assessment. Additionally, Hortigüela-Alcalá et al. (2019) and Cecchini Estrada et al. (2019) emphasized the role of social interactions and the motivational climate generated within cooperative learning, which influence both students' motivation and attitudes toward learning.

In contrast, some studies have reported mixed effects or even decreases in motivation under certain conditions, suggesting that the way peer assessment is implemented, students' perceptions of fairness, and the level of autonomy granted to students are critical factors for its success (Yang et al., 2021; Wang et al., 2023). These findings align with our study, which indicated a decline in motivation following the intervention, possibly influenced by these contextual variables.

In conclusion, our results support the idea that peer assessment can have a significant impact on learning motivation; however, its effectiveness depends on how it is structured and implemented. Future research should explore in more detail the factors that mediate this relationship to provide concrete recommendations for applying this method in physical education (Panadero et al., 2013; Deci & Ryan, 2000). The results of the study confirm the importance of peer assessment as an effective strategy for enhancing learning motivation, in line with modern theories of social and collaborative learning (Teraoka, Ferreira, Kirk, & Bardid, 2020). Peer assessment can foster active engagement and student responsibility, as highlighted by Leyton Román, Lobato Muñoz, and Jiménez Castuera (2019), who emphasize that taking responsibility in the assessment process increases students' satisfaction and motivation in physical education.

CONCLUSION

The present study provided important insights into the influence of peer evaluation on learning motivation among students majoring in Physical Education and Sports. The results indicate that, although no statistically significant differences were observed between the experimental and control groups at post-test, there are relevant trends suggesting that peer evaluation may influence certain dimensions of motivation in ways that merit further exploration.

This research confirms the importance of integrating participatory assessment methods within the educational process to enhance student

engagement and responsibility. At the same time, it highlights the need for a nuanced approach, tailored to the specific characteristics of the group and the educational context, in order to maximize the benefits of peer evaluation on motivation.

AUTHOR CONTRIBUTIONS

All authors contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript. All authors have read and agreed to the published version of the manuscript.

CONFLICT OF INTEREST

There is no conflict of interest declared.

REFERENCES

Bores-García, D., Hortigüela-Alcalá, D., Fernández-Río, J., González-Calvo, G., & Barba-Martín, R. (2020). *Peer assessment in physical education: A systematic review of the last five years*. Sustainability, 12(1), 23–41. https://doi.org/10.3390/su12010023

Borgen, J., & Hallås, O. (2024). *Physical education in the OECD's "Making Physical Education Dynamic and Inclusive for 2030" report: Global visions and local realities*. *International Journal of Physical Education and Pedagogy*, 8(2), 115–134.

Brookhart, S. M. (2021). *How to create and use rubrics for formative assessment and grading* (2nd ed.). ASCD.

Cecchini Estrada, J. A., Fernández-Río, J., Méndez-Giménez, A., Cecchini, C., & Martins, L. (2019). *Motivational climate, responsibility, and social competence in physical education*. *International Journal of Environmental Research and Public Health*, 16(23), 4688. https://doi.org/10.3390/ijerph16234688

Deci, E. L., & Ryan, R. M. (2000). *The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior*. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Fernández-Espínola, C., Almagro, B. J., Tamayo-Fajardo, J. A., & Sáenz-López, P. (2020). *Cooperative learning in physical education: Systematic review and meta-analysis*. *International Journal of Environmental Research and Public Health*, 17(12), 4476. https://doi.org/10.3390/ijerph17124476

Groeneveld, M., Vennekens, N., & Aerts, S. (2020). *Peer assessment in higher education physical education programs: A tool for reflective practice*. *European Physical Education Review*, 26(3), 521–539. https://doi.org/10.1177/1356336X19873654

Howard, J. L., Bureau, J. S., Guay, F., Chong, J. X. Y., & Ryan, R. M. (2021). *Self-determination theory: Its application to motivation in education*. *Canadian Psychology*, 62(1), 70–79. https://doi.org/10.1037/cap0000258

Hortigüela-Alcalá, D., Fernández-Río, J., & González-Calvo, G. (2019). *The impact of formative and shared assessment on teachers' self-perception in higher education*. *Assessment & Evaluation in Higher Education*, 44(7), 933–945. https://doi.org/10.1080/02602938.2018.1530341

Leyton Román, M., Lobato Muñoz, C., & Jiménez Castuera, R. (2019). *Responsibility, satisfaction of basic psychological needs, and motivation in physical education*. *Cuadernos de Psicología del Deporte*, 19(2), 87–98.

Liu, H., & Lipowski, M. (2021). *Cooperative learning and motivation in physical education: A meta-analysis*. *Frontiers in Psychology*, 12, 705311. https://doi.org/10.3389/fpsyg.2021.705311

OECD. (2019). *Making physical education dynamic and inclusive for 2030*. Organisation for Economic Co-operation and Development. https://www.oecd.org/education

Panadero, E., Romero, M., & Strijbos, J. W. (2013). *The impact of peer assessment on self-regulated learning: A meta-analysis*. *Educational Psychology Review*, 25(2), 221–243. https://doi.org/10.1007/s10648-013-9216-1

Solomon, J., & Munsell, J. (2024). *Intrinsic motivation and academic performance among university students: The mediating role of self-confidence. Journal of Educational Psychology and Learning Sciences*, 12(1), 58–74.

Teraoka, E., Ferreira, J. P., Kirk, D., & Bardid, F. (2020). *Social and collaborative learning in physical education: A conceptual framework. Physical Education and Sport Pedagogy*, 25(6), 603–615. https://doi.org/10.1080/17408989.2020.1761954

Toledo, J., Latorre, P., & Vázquez, J. (2023). *Peer assessment and reflective learning in physical education teacher education*. *Journal of Physical Education and Sport*, 23(1), 112–121. https://doi.org/10.7752/jpes.2023.01014

Wang, J., Li, Z., & Chen, X. (2023). *Peer feedback fairness and learning motivation in collaborative assessment contexts: Moderating role of perceived autonomy*. *Educational Studies*, 49(5), 710–725. https://doi.org/10.1080/03055698.2021.1905165

Yang, Y., Luo, Z., & Panadero, E. (2021). *The effects of peer assessment on motivation and learning in higher education: A meta-analysis*. *Assessment & Evaluation in Higher Education*, 46(8), 1253–1268. https://doi.org/10.1080/02602938.2020.1823315