ORIGINAL ARTICLE

Validation of research activity in the field of sports science and physical education for students in higher education

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Abstract

Background and Study Aim: The research validation in sports science and physical education is essential for performance measurement. This validation is also important for developing innovative educational tools and ensuring rigorous evaluation criteria in academic and school settings. The aim of the study is to evaluate and validate the research activities carried out by students in bachelor's and master's programs in sports science and physical education.

Material and Methods: The study included 103 students (75 undergraduate and 28 master's) from the Physical Education and Sports Department, analyzed based on their study program and sports specialization. The content of the Research Methodology (RM) course was monitored using the e-learning platform of the university center. Knowledge evaluation was based on the requirements in the syllabus for each study program. It followed the guidelines regarding assessment rules in the credit system and gradebook completion. Each study program focused on indicators S1 for elective and compulsory activities, which included course and seminar participation (A1, A2, and A3), final evaluation (F.E.), and S2. The final grade (FG) was rounded in favor of the student. The portfolio (Project) included 3 reports (R) regarding the thematic content of the research methods addressed: literature review method (R1), survey method based on questionnaires (R2) and experimental method (R3). Statistical indicators were calculated using the KyPlot 6.0 software. To calculate the differences in means between groups (study programs), the nonparametric Kruskal-Wallis test was used. The differences between bachelor's study programs were calculated with the Wilcoxon Rank Sum Test (Mann-Whitney U Test) for unpaired data. Statistical significance was set at $p < 0.05$.

Results: The students from Physical Education and Sport had higher attendance ($p<0.05$) and better performance in course activities ($p<0.05$), seminars ($p<0.05$) and mandatory activities ($p<0.01$). However, the differences in final evaluation and final grade were not significant ($p>0.05$). The students in the master's program showed greater involvement in seminars compared to courses (+2.5%). The confidence interval analysis (0.95) pointed out lower variability for indicators A1, A2 and A3, while the final evaluation and final grade highlighted greater dispersion. Statistical tests indicated significant differences between groups ($p<0.001$), with a higher average for the PES program (8.00 points), suggesting the impact of different requirements and evaluation weights on academic performance. The opinions of students about the course RM showed a high level of appreciation (72.9% excellent, 20.4% very good). This confirmed the quality of teaching and identified opportunities to improve teaching methods meant to enhance academic motivation.

Conclusions: Significant differences were identified between undergraduate and master's programs regarding student involvement in academic activities and evaluation results. It is necessary to adapt teaching methods and evaluation strategies for optimizing learning and student motivation in the field of physical education and sports science.

Keywords: hypothesis, research methods, evaluation, study program, performance, students.

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Introduction

In sports science and physical education, research validation is a fundamental component

in advancing knowledge and improving academic and professional practices. This process is crucial for assessing performance in physical education and exercise science [1] and for developing and implementing innovative educational tools, such as virtual courses dedicated to sports and physical education [2]. Additionally, studies on quality physical education underscore the necessity of validated tools for evaluating its effectiveness in school settings [3, 4], highlighting the importance of rigorous criteria in research validation.

Higher education students actively engage in research processes, contributing to the field's progress by developing essential analytical, methodological, and applied competencies for their careers. Research on competency assessment in higher education emphasizes the application of the scientific method to enhance research skills and explores factors influencing the acquisition of generic competencies in academic settings [5, 6, 7].

Another study demonstrated that a rigorous research foundation is essential for advancing knowledge in this field [8]. The application of appropriate scientific methods plays a key role in ensuring the validity and reliability of studies [9]. Moreover, the literature highlights the risks of questionable research practices and their impact on the accuracy of results in sports science and exercise medicine [10]. Additionally, specialized studies emphasize the need for stringent criteria to validate hypotheses and conclusions.

Research validation plays a crucial role in developing academic and professional competencies, directly influencing innovation and the practical applicability of results. Accurate assessment of professional competencies is fundamental to the training of specialists [11], while integrating innovation in education helps prepare students for professional challenges [12]. Thus, the development and validation of assessment tools, such as rubrics for technical competencies [13] and innovative methods for measuring practical skills [14], are essential for ensuring the relevance and applicability of research outcomes. In an academic context where the demands for scientific rigor and practical relevance are continuously increasing, maintaining research quality is imperative. A clear understanding of the validation process and scientific argumentation provides a comprehensive perspective on research methods that ensure compliance with academic and professional standards in sports science and physical education, as highlighted in the specialized literature [15, 16, 17].

Relevant sources provide detailed information on research methods in physical education and sports, enabling deeper methodological analysis and validation in this field [18]. Specialists offer fundamental tools for research validation in physical education and sports [19] and highlight the impact of sports education on students' motivation and perception of physical activity [20]. Additionally, some studies explore students' attitudes toward physical education and sports, offering valuable insights for specialized research [21]. They also examine the applicability of research in physical education, providing a useful framework for assessing its practical relevance in educational management [17].

Analysis of the research has shown that validation in sports science and physical education allows for ensuring the reliability and applicability of scientific findings. Despite numerous studies in this field, there remains a need for more effective solutions to enhance research methodologies, improve assessment tools, and refine validation criteria. Addressing these gaps may prove useful for improving academic standards, fostering innovation, and optimizing professional training in physical education and sports science.

The aim of the study is to evaluate and validate the research activities carried out by students in bachelor's and master's programs in sports science and physical education.

Materials and Methods

Participants

The participants in the research were undergraduate students and master's students from the Department of Physical Education and Sport at the Faculty of Sciences, Physical Education and Informatics at the University of Pitești (currently the University Center of Pitești, National University of Science and Technology "Politehnica" Bucharest). A total of 103 subjects participated in the study, namely 75 from the undergraduate program and 28 from the master›s program – Performance in Sports (PS). The 75 bachelor's students came from two study programs: Physical Education and Sports – PES (46 students) and Sports and Motor Performance program – SMP (29 students).

All subjects were informed and gave their voluntary consent to participate in the research, in accordance with the Declaration of Helsinki and the Ethics Committee of the Doctoral School of Physical Education and Sport Science (no. 24 / 17.01.2025).

Research Design

This scientific approach was carried out within the course "Research Methods in Physical Education and Sports Science" for bachelor›s studies in the PES, SMP specialization programs. As for the master›s studies, the research was conducted in the "Research Methodology of Sports Performance" course of the "Performance in Sport" specialization program, aimed at deepening knowledge in the field of Physical Education and Sport Science.

The research took place during the second semester of the 2022-2023 academic year, consisting

of 14 weeks, with 14 hours of lectures and 28 hours of seminars for the bachelor's programs, and 14 hours of lectures and 14 hours of seminars for the master's program (one lesson = 2 physical hours).

The content of the Research Methodology (RM) course was monitored using the e-learning platform of the university center.

Knowledge assessment was consistent with the requirements of the course syllabus for each study program. It observed the guidelines for evaluation in the credit system and gradebook completion [8]: 4 credits for all programs, with the following evaluation methods: colloquium for the bachelor›s PES and SMP specializations, and an exam for the master›s PS specialization.

The requirements of the course syllabus:

For the Bachelor's degree in PES and SMP: elective and mandatory activities, S1 = ∑A1-3, where A1 (10%) – Attendance, A2 (30%) – Course activity (C), evaluation criteria: correctness and complexity of knowledge, logical coherence, degree of assimilation of the specialized language, and A3 (30%) – Seminar activity (S). Project – 3 papers. Final evaluation (F.E.) (30%): Colloquium (paper) and indicator S2 = S1 + F.E.

For the Master's degree in PS: elective and mandatory activities, indicator S1 = ∑A1-3, where A1 (20%) – Minimum 60% attendance in practical activities, repeated participation in discussions, and submission of a portfolio according to minimum requirements for S and homework for C; A2 (20%) – Course activity and A3 – Seminar activity. Project – 3 papers. F.E. (40%): Exam (examination paper) and indicator S2 = S1 + F.E.

The final grade (FG), the rounding of the obtained score, was made in favor of the student. The grade for the final evaluation is at least 5 points.

Requirements for Report 1 (literature review method):

- Google Scholar (general/specific results);
- Formulating the working hypothesis for the bibliographic study (see course materials);
- Analysis of recent publications from 2023 (using Google translation / + personal additions) – 10 publications complying with the given model;
- Similar general/specific searches.

Requirements for Report 2 (survey method based on questionnaire):

- Formulating the working hypothesis and presentation of the research title based on literature review;
- Create an account on Gmail.com;
- Use of Google Applications (Google Drive, New Folder);
- Development of a Google Forms Questionnaire (Introductory Text, Main Questionnaire);
- Preparing Report 2 (Copy/Paste or Screenshot each page of the Questionnaire and interpret the responses); conclusions.

Requirements for Report 3 (experimental method): Scientific justification (validation) of the content of the developed topic through the use/implementation of the testing method to verify the independent variable.

The content of the reports was evaluated using grades ranging from 1 to 10 points; the grade was multiplied by the percentage corresponding to the requirements of the course syllabus.

To enhance the teaching-evaluation process, a questionnaire consisting of six indicators was used for enabling students to assess the teaching staff [8].

Stages of conducting the research:

- Stage I – Conducting the bibliographic study of the specialized literature – Report 1 (Google Scholar);
- Stage II – Conducting the sociological case study using the survey method with the help of a questionnaire – Report 2 (Google Forms);
- Stage III – Scientific argumentation using the experimental method – Report 3.

Each report topic was aimed at validating a working hypothesis proposed by the student/graduate student.

Statistical Analysis

The calculation of statistical indicators was performed using KyPlot 6.0 (©1997-2020, KyensLab Inc), including mean, standard deviation (SD), coefficient of variation (CV%), and Confidence Interval for the Mean (0.95). To calculate the differences in means between the three groups (programs of study), considered irregular samples, the nonparametric Kruskal-Wallis Test was used. The Wilcoxon Rank Sum Test (Mann-Whitney U Test) for Unpaired Data was applied between the undergraduate study programs (PES and SMP). Statistical significance was set at $p < 0.05$.

Results

As mentioned in the experimental design, the research involved 103 students, of which 73% were undergraduate (75 students: 46 in PES, namely 29 males (M) and 17 females (F), and 29 in SMP with 17 M and 12 F) while 27% were master's students (namely 28 master's students: 19 M and 9 F).

In the SMP program, students specialized in the following sports: Athletics (6.9%), Basketball (27.7%), Dance (3.4%), Football (24.2%), Handball (17.2%), Judo (6.9%), Kayaking (6.9%), Swimming (3.4%), and Tennis (3.4%). In the master's program, the specialties included Athletics (13.3%), Basketball (20%), Football (20%), Handball (26.7%), Judo (10%), Tennis (6.7%), and Volleyball (3.3%).

Table 1 above provides an overview of the research directions addressed in various sports disciplines, organized into three distinct methods: bibliographic study, survey method using a questionnaire,

Table 1. Content of the topics of the research methods approached

Category	Literature review method	Survey method based on questionnaire	Experimental method
Athletics	- Study of athletics - Research on athletics in schools - specific physical training in athletics	Evaluation of coaches' perceptions on athletics training for children and juniors	- Study of the long jump - Endurance and speed tests for optimizing athletics training
Basketball	- Study of basketball - Study of learning how to shoot a basketball - Dribbling in basketball	- Contributions to improving shooting accuracy through 1-on-1 training - Study of competitive exercises based on biokinematic variables	- Study on the accuracy of different types of basketball shots (one-point and three-point shots)
Boxing	- The benefits of boxing: maintaining physical and mental health - Study on learning boxing for children	Psychological and motivational factors in boxing for children under 15 years old	Speed and strength tests in children's boxing for training optimization
Soccer	- Research on the sports branch "soccer" - Study of soccer - Research on soccer in schools - Methodological contributions to learning soccer technique and tactics	- Study on recovery and rehabilitation of juniors in soccer after specific effort - Study of soccer spectators - Research on technique in soccer	- The effect of support foot positioning on kicking performance in soccer - Heading the ball from a jump in soccer - Learning to shoot on goal in men's soccer - Anticipating the lateral direction of penalty kicks in soccer
Handball	- Study of attacking techniques in handball - Research on the development of jumping ability (explosiveness) in handball for children and juniors - Attack technical training for elite handball players	- Research on jump shot in handball - Jump shot in handball - Research on developing the jump shot in handball	- Study on optimizing jump shots in handball - Study on the influence of biomechanical variables on shooting accuracy
Judo	- Physical training in judo - Development of the "speed" motor skill in women's judo	- Analysis of psychological factors influencing performance in judo - Study on the effectiveness of throwing techniques in judo	Testing physical and technical parameters in judo for performance optimization
Kayaking	Study on training and performance in kayaking	Athletes' perceptions of success factors in kayaking	Endurance and paddling technique tests for improving performance
Volleyball	Optimization of technical training in volleyball at the middle school level	Coaches' perception of technique and tactics in volleyball	Strength and agility tests for improving performance in volleyball
Other Sports	- Technical training of kicks in elite karate - Study of learning in combat sports	Analysis of coaches' perception of teaching combat sports	Reaction and balance tests in combat sports

and tests for verifying the independent variable. This approach ensures a comprehensive analysis of the topic, combining theoretical arguments, practitioners' perceptions, and practical validation through objective testing.

Table 2 presents the results of the knowledge evaluation in the course "Research Methods in Physical Education and Sport Science" for students in the undergraduate programs. When comparing the data between the study programs, it is observed that students in the PES program had higher attendance rates, with a 6% increase ($p < 0.05$). They also achieved superior results, with a 6.3% higher score in course activity (A2) ($p < 0.05$) and a 10.3% higher score in seminar activity (A3) ($p < 0.05$). Regarding the elective and mandatory activities (S1), they had a better result by 8.3% ($p < 0.01$).

For the final evaluation (colloquium), the differences between programs were not significant, with only a 1.70% variation in the averages ($p > 0.05$). However, for the indicator S2 (S1 + F.E.), significant differences of 6.2% were observed ($p < 0.05$). As for the final grade (F.G.), the differences between programs were not significant, namely 3.6% ($p > 0.05$), considering that the requirements were identical for both study programs.

Table 3 shows the results of the evaluation for master's students specializing in Performance in Sports (PS) in the course "Methodology of Sports Performance Research (MSPR)". Comparing the indicators A1, A2, and A3 with the total score of the S1 indicator (60%), a higher level of involvement in seminar activities can be observed. The score is 2.5% higher than that of the course. The results for S1 reveal an involvement level of 81.8% in both elective and mandatory activities.

Regarding the final evaluation (F.E.), students achieved an average score of 80.6% (8.06 points). The sum of the S1 and F.E. indicators led to a final average score of 8.25 points. This provides a 0.19-point advantage (1.9%) in the rounding of the final grade (N.F.) in favour of the student.

Concerning the confidence intervals (0.95), the indicators A1, A2, and A3 have the lowest values, indicating a more stable estimate of these variables. On the other hand, the indicators F.E., S2, and N.F. have higher values, indicating increased variability in the final grades. The increase in the confidence interval from S1 (0.112) → F.E. (0.159) → S2 (0.256) →F.G. (0.271) highlights that the variability of the results increases as more evaluation factors are accumulated.

Table 4 shows the results of the analysis of differences between the investigated groups in the "Methodology and Research Methods in Physical Education and Sport Science" course. Comparison

Table 2. Results of the evaluation in the course on Research Methods in Physical Education and Sport Science

Variables	Mean		SD		CV%		Z	Probability		
	PES	SMP	PES	SMP	PES	SMP		Upper	Lower	Two-sided
A1 10% (pts)	0.67	0.61	0.14	0.12	21.19	19.26	2.16	0.159	0.985	0.031*
A2 30% (pts)	1.75	1.56	0.41	0.23	23.63	14.86	2.27	0.012	0.988	0.024*
A3 30% (pts)	2.23	1.92	0.50	0.30	22.44	15.87	2.56	0.005	0.995	0.011*
S1 (pts)	4.64	4.06	0.86	0.56	18.60	13.92	2.76	0.003	0.997	0.006**
F.E. 30% (pts)	2.25	2.20	0.47	0.33	20.79	15.12	0.57	0.287	0.717	0.574
S2 (pts)	6.88	6.26	1.26	0.77	18.31	12.36	2.08	0.019	0.982	0.038*
F.G.(pts)	6.91	6.55	1.26	0.83	18.25	12.63	1.29	0.098	0.903	0.197

Note: PES: n=46; SMP: n=29; F.E. –final evaluation; pts. – points; SD – standard deviation, CV% – coefficient of variation; P – Probability; Z - Wilcoxon Rank Sum Test (Mann-Whitney U Test)

Table 3. Results of the evaluation in the course on Methodology of Sports Performance Research

Variables	Mean	SD	CV%	Confidence Level of Mean (0.95)
A1 20% (pts)	1.61	0.04	2.35	0.015
A2 20% (pts)	1.63	0.13	8.19	0.052
A3 20% (pts)	1.68	0.15	8.80	0.057
S1 (pts)	4.91	0.29	5.90	0.112
F. E. 40% (pts)	3.16	0.41	13.06	0.159
S2 (pts)	8.06	0.66	8.21	0.256
F.G. (pts)	8.25	0.70	8.49	0.271

Note: n=28; F. E. – final evaluation; F.G. – final grade, SD – standard deviation, CV% – coefficient of variation.

Table 4. Results of the differences between the groups investigated during the course "Methodology and Research Methods in Physical Education and Sport Science

Statistical indicators	Study programs	S1 (points)	F. E. (points)	S2 (points)	Final grade (grades)
Median	PES, n=46	4.6	2.4	6.9	7.00
	SMP, n=29	4.1	2.4	6.5	7.00
	PS, n=28	4.8	3.2	7.8	8.00
	Total, n=103	4.6	2.4	7.00	7.00
Chi-Square	PES SMP PS	27.07	56.54	36.52	37.00
P-Value	EFS SPM PS	0.0001***	0.0001***	0.0001***	0.0001***

Note: df = 2, Nonparametric Kruskal-Wallis Test; ***p<0.001, PES – Physical education and sport; SMP – sport and motor performance; PS – performance in sport.

of the medians of the study programs shows significant differences in terms of elective and mandatory activities (S1) and the final evaluation (F.E.). The final evaluation includes the colloquium (30%) and the exam (40%), with different weights within the evaluation. Thus, the S1 indicator has values of 65.7% for PES, 58.6% for SMP, and 80% for PS, while the F.E. is 80% for all programs. The S2 and F.G. indicators highlight an overall average of 7.00 points, but the PS program has a higher average of 8.00 points, suggesting a more solid practical and theoretical experience for students. The comparison of averages between the investigated groups reveals significant differences at $p < 0.001$, reflecting the different requirements and evaluation weights applied to each study program.

The analysis of students' opinions on the teaching activity within the "Methodology and Research Methods in Physical Education and Sport Science" course shows that 72.9% rate it as excellent, 20.4% as very good, 4.8% as good, and 1.9% as satisfactory. These results reflect the quality and efficiency of the professor's course delivery. They also reveal the need for improvements in certain teaching methods to increase student motivation in the upcoming academic year.

Discussion

The research activities conducted by students in bachelor's and master's programs in physical education and sport science were evaluated and validated. Thus, it was determined that the majority (73%) of the 103 students participating in the study were enrolled in the bachelor's program. This program included a diverse range of sports specializations such as football, basketball, and handball. Meanwhile, 27% of the participants were at the master's level, with the majority specializing in fields like handball, football, and basketball. This distribution reflects a significant presence of team sports at both bachelor's and master's levels. Their variability may provide a solid basis for exploring the impact of different specializations on research results.

The results of using various research methods in physical education (Table 1) include bibliographic study, questionnaire surveys, and tests for verifying the independent variable. These methods contribute to a complex and integrated approach, combining existing theories, practitioners› perceptions, and validation through objective testing. The analysis of research methods applied in physical activity is a fundamental resource, providing a solid foundation for understanding the methodologies used in this field. Their study offers a detailed picture of the research process in physical activity, essential for understanding the approaches made in physical education and sports research [3].

Regarding the validation of tests for verifying the independent variable, significant examples are provided by means of the SOFIT tool. This tool is used for assessing the physical activity levels of high school students. The research emphasizes the importance of validating physical activity measurement tools and can be applied to analyze testing methods in physical education [22].

As for the use of questionnaires in research, it is relevant for validating self-assessment tools in the context of physical education, particularly for measuring perceptions and attitudes. This offers a valuable methodology for analyzing and developing questionnaires as research instruments [23]. The development and validation of questionnaires designed to study the perception of conflict in physical education make a significant contribution. Their utility in understanding the dynamics of relationships and perceptions in physical activities is highlighted [24]. Some specialists exemplified the

use of a validated instrument for assessing moderate-vigorous physical activities in 5-6-year-old children. Thus, they demonstrated the applicability of objective tests to measure independent variables in physical education research [25].

The results presented in Table 2 reveal a higher level of student involvement in the courses and seminars (bachelor's level) in the case of the PES students, which led to superior performance. These findings are supported by previous research pointing out that student engagement in the educational process is crucial for academic performance [26, 27]. The differences in the final evaluation and final grade are not significant ($p > 0.05$), indicating uniformity in the results across study programs. This aspect can be explained by the uniformity of academic requirements and evaluation methods, as shown in the specialized literature on quality assurance in higher education [17, 28].

The results presented in Table 3 reveal a greater involvement of master's students in seminar activities, confirming the importance of active participation in the educational process. Previous studies have emphasized the positive impact of seminars on academic persistence and student performance [29, 30]. Moreover, the higher variability in final grades, reflected by the progressive increase in confidence intervals, can be attributed to the influence of multiple evaluation factors. This complies with research suggesting that academic engagement and the emotional climate in the classroom significantly affect academic outcomes [31, 32]. Therefore, it has been shown that an interactive and well-structured educational environment contributes to better student integration and improved performance.

The results listed in Table 4 highlight the differences between the investigated groups. Although all the study programs obtained similar scores in the final evaluation (F.E.), there are significant differences in the indicators S1 and F.G. These differences reflect the diversity of educational approaches and the varied theoretical and practical experiences of students. In particular, higher performance was noticed in the PS program. This aspect emphasizes the specific impact of the requirements and weights of each program on the engagement and academic performance of students.

Thus, these findings support the idea that different educational methods significantly influence academic results, as shown in the studies about academic performance in various educational formats [33, 34]. In addition, research [35, 36] points out the importance of evaluating the educational programs and their impact on student success. These are relevant aspects for the interpretation of the results of this study.

Research on football, which accounts for approximately 28% of the total topics studied, addresses various aspects, from game techniques and tactics to specific physical training and spectators› perceptions of the sport. Recent studies underline the importance of biomechanical analysis in improving sports performance and identify effective methods for evaluating player movements [37, 38]. Performance analysis methodology in team sports, including football, has made significant progress due to the use of advanced technologies for monitoring and measuring athletes' effort [39, 40]. In this context, there is an emphasis on the need for rigorous research methods to obtain relevant data on athlete performance in competitions and training [41].

The opinions of students on the teaching activity within the "Methodology and Research Methods in Physical Education and Sports Science" course were analyzed. The results of the analysis suggest a generally positive evaluation of teaching, with 72.9% of students rating the activity as excellent. However, the 4.8% who consider the course merely good and 1.9% who consider it satisfactory indicate the need for improvement in certain teaching methods. These findings stress the importance of continuously adjusting and adapting educational strategies to enhance student motivation and performance, aiming for a more effective academic experience in the future.

Study Limitations

This study is limited by the sample size and its focus on a specific academic context, which may affect the generalizability of the findings. Additionally, the reliance on self-reported data in student evaluations may introduce subjective bias. Future research should consider a broader participant pool and objective assessment methods to enhance result reliability.

Conclusions

1. Diversity of sports specializations is highlighted by the fact that most of the students participating in the research come from team sports such as football, basketball, and handball. This fact reflects the considerable presence of these sports at both undergraduate and master's levels. This diversity provides a solid foundation for exploring the impact of different specializations on academic performance and involvement in educational activities.
2. The analysis of the results reveals important differences between students in undergraduate and master's programs. These differences are particularly related to the involvement in course and seminar activities, as well as in elective and mandatory activities. Master's students, especially those from Performance in Sports specialization, demonstrated higher involvement and superior performance in

educational activities, proving a stronger theoretical and practical training.

3. The evaluation and additional activities have an impact on performance, through the significant differences in evaluation indicators such as elective and mandatory activities (S1) and final evaluation (F.E.). Thus, the influence of different evaluation requirements applied to each study program is highlighted in relation to the overall performance of students. Specifically, additional activities and extracurricular exercises had a significant impact on the performance of students in the Physical Education and Sports (PES) program.
4. The evaluation and rounding of final grades had a positive impact on student performance, particularly for those who were close to rounding thresholds. This suggests a fair evaluation mechanism that can influence students' final performance by correcting any minor discrepancies in grading.
5. The need to improve teaching methodologies is evident, as although 72.9% of students rated the teaching activity as excellent, there are opportunities to enhance certain teaching methods, considering that 4.8% rated the course as only good and 1.9% as satisfactory. These findings underline the necessity of continuously adapting and diversifying educational methods to better meet the needs and expectations of students, thus increasing motivation and academic performance.

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Conflict of Interest

There is no conflict of interest to declare.

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