ORIGINAL RESEARCH

Implementing Team-Based Learning in Physiotherapy Education: Students' Perceptions and Preferences Compared to the Traditional Lecture

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Introduction: Team-Based Learning (TBL) is an educational strategy designed for small groups that can be effectively implemented across various educational levels. The aim of TBL is the development of meaningful learning teams, facilitating student interaction and effective communication in problem-solving. It is hypothesized that the use of TBL demonstrates higher levels of satisfaction, engagement and responsibility regarding the acquisition of knowledge than the traditional method of master class.

Methods: A cross-sectional study was carried out. Twenty-four university students enrolled in the subject of Clinical Reasoning and Evidence Based Practice of the Physiotherapy Master´s programme during the academic year 2022–23 were included. Engagement, satisfaction and preferences were collected through the TBL Student Assessment Instrument (TBL-SAI).

Results: Twenty-three students were included in the final analysis, with a mean age of 25.29 ± 3.84 years. The results obtained from the TBL-SAI indicated a score of 25.57 on the accountability subscale, 51.04 on the preference for this learning approach subscale, and 32.43 on the overall satisfaction subscale.

Conclusion: Students found TBL to be engaging, fostering greater responsibility for both individual and group learning. Compared to traditional lectures, TBL sessions were preferred by students, reflecting a higher level of satisfaction with this collaborative learning approach. Further investigation is warranted to assess long-term knowledge retention and to ensure alignment between TBL activities and intended learning objectives.

Keywords: active methodologies, task-based learning, clinical reasoning

Introduction

The millennial generation is known for being optimistic, ambitious, confident, stressed, and inclusive, as well as having a strong ability for cooperative work.[1] However, traditional teaching method often constrain creativity and critical thinking, leaving students disengaged and underprepared for real-world problem solving.[2] The master class (MC) is included within this more traditional perspective, characterized by a lecture-based format in which the instructor delivers content in a unidirectional manner, with limited student interaction or active participation. In response, active learning methodologies such as Team-based learning (TBL), have gained traction as powerful tools for fostering student autonomy and metacognitive skills development, positioning students as active participants in their learning.[3,4] Despite their potential, the comparative impact of TBL versus traditional approaches on student preferences, attention, retention of content, and performance remains underexplored. Addressing these gaps is critical, as failing to so risks perpetuating student disengagement and undermines efforts to prepare future health professionals with the critical thinking, collaboration, and problem-solving skills essential for success.

TBL has gained popularity in recent years and has become an effective, student-centered teaching approach in medical and healthcare education.[1,2] It is sometimes introduced as an alternative to Problem-Based Learning (PBL). Compared to PBL, TBL preserves the benefits of small group learning while significantly reducing the need for a large number of tutors. Sweet and Michaelsen (2011) suggests TBL might be particularly effective when foundational knowledge needs to be efficiently covered before application and argue conceptually that TBL's structured approach ensures all students engage with core concepts before applying them, potentially leading to a more solid foundation than in some PBL implementations where knowledge acquisition can be more self-directed.[5] Grounded in constructivist learning theory, TBL is an educational strategy where small groups of students build knowledge through a structured learning process.[2,6] This approach aligns with the principle that meaningful engagement and application of prior knowledge lead to deeper understanding. Notably, TBL is particularly effective in fostering clinical reasoning through dialogue, shared problem-solving, and feedback.[6,7] For instance, a systematic review highlighted TBL's role in enhancing clinical reasoning skills among healthcare professionals, leading to better academic and clinical outcomes. Moreover, by engaging students in structured team-based problem-solving and decision-making tasks, TBL promotes active learning and critical thinking, which are integral to clinical reasoning.[7] While the strengths of TBL in fostering active learning, problem-solving skills, and teamwork are undeniable, there are potential shortcomings regarding group dynamics, resource demands, and equitable assessment that may warrant careful consideration.[2,6]

According to Krug et. al.[8] TBL learning process is structured in three stages: 1) Preparation, where students prepare the task outside the classroom; 2) Readiness Assurance, this stage takes place in the classroom, beginning with an individual test, followed by a team-based version, and concluding with feedback; 3) Application: This process is carried out through a series of team tasks designed by the teacher, involving problem-solving and decision-making, concluding with a presentation and constructive feedback. For TBL to achieve its objectives and be effective, teams must be permanent, composed of five to seven member with an odd number allow for tiebreaker in decision-making, and learners must immediate feedback from teachers.

Research related to TBL spans various disciplines and educational levels, consistently demonstrating positive student outcomes and student attitudes toward team-based learning.[8–13] The TBL-SAI, developed by Mennenga, is a validated and reliable tool that evaluates students' perceptions of accountability, their preferences regarding the learning process, and overall satisfaction.[14] Systematic reviews further corroborate these findings, highlighting the utility of this tool to demonstrate enhanced student experiences and academic achievements associated with TBL, especially when compared to traditional lectures.[15] A recent study that assessed student engagement in pharmacotherapy sessions using the TBL-SAI found that TBL led to higher engagement and increased accountability compared to traditional lecture-based methods.[16]

Although numerous studies have explored health science education, only two have specifically examined the use of TBL-SAI among physical therapy students to date.[17,18] In physical therapy programs, the use of TBL has been applied specifically to the teaching of gross anatomy[17] and the physiopathology of the respiratory system.[18] The other studies have focused on students from other health programs.[14,19] And to our knowledge, there are no studies assessing the use of TBL in the context of Physiotherapy advanced training programs. Thus, we hypothesized that the use of TBL for the resolution of a clinical case within the subject of Clinical Reasoning and Evidence Based Practice of the Physiotherapy Master's Degree demonstrates higher levels of satisfaction, engagement and responsibility regarding the acquisition of knowledge than the traditional method of MC. This study aimed to explore students' perceptions of the Team-Based Learning (TBL) methodology applied to the resolution of a clinical case within the subject of Clinical Reasoning and Evidence-Based Practice in the Physiotherapy Master's program at UIC during the 2022–2023 academic year. Specifically, it sought to report on students' sense of responsibility, engagement, and satisfaction with their learning process under this methodology. Additionally, the study aimed to compare student preferences regarding TBL and traditional master classes in terms of attention and content retention, as well as to evaluate academic performance under both instructional approaches.

Methodology

Study Design

An observational, cross-sectional study by means os survey (electronic questionnaire) was conducted, with the research protocol approved by the Ethics Committee of UIC (Code FIS-2022-14). The study was conducted at the International Universitat Internacional de Catalunya during September of 2022 and February 2023.

Study Population

The sample were students enrolled in the subject of Clinical Reasoning and Evidence Based Practice of the Physiotherapy Master´s programme during the academic year 2022–23. Students were eligible for the study if: 1) they connected telematically to all the hours of the two online classes in which the study took place, 2) they actively participated in both classes (in class n°1 they must have solved the three "quizzes" or tests that the teacher launched during the development of the class and in class n°2 they must have obtained an average score equal to or greater than 5 in the evaluation of participation, attitude and capacity for conflict resolution carried out by the teammates and the facilitator of the activity) and, 3) they gave informed consent.

Outcomes and Measurement Instruments

The sociodemographic data included were the students' age in years and their gender.

Engagement and satisfaction with the TBL process as well as the preferences between this modality and the traditional master class method were collected through the TBL-SAI questionnaire. This instrument with 33-items is divided into 3 subscales: accountability (8 items), preference for master class or TBL (16 items), and Student satisfaction (9 items). Each item is scored on a Likert-type scale ranging from 1 to 5, where 1 represents "strongly disagree" and 5 represents "strongly agree". The complete instrument presents an acceptable Cronbach's Alpha of 0.941. The responsibility, preference and satisfaction subscales present a Cronbach's Alpha of 0.782, 0.893 and 0.942, respectively.[14]

Procedure

The study was developed in the context of the Clinical Reasoning and Evidence-Based Practice subject during the 2022–23 academic year. This subject is compulsory and consists of a total of 4 ECTS credits, of which 1 credit is taught online. Of the total of 10 hours online, 5 of them are taught in December (class n°1) and the other 5 in February (class n° 2). Before starting online teaching, all enrolled students had completed 20 face-to-face hours of this subject, where they became familiar with the terminology and basic principles of clinical reasoning applied to the evaluation and treatment of patients. In addition, at the beginning of the subject, students received an informative session about its development as well as the research that was intended to be carried out.

The main objective of the subject was to integrate scientific evidence, clinical data and biopsychosocial factors related to the clinical context of advanced Physiotherapy. To achieve this goal, the main teaching tool used was the clinical case of a patient with arthro-neuro-muscular dysfunction.

Class n°1 was developed as follows: the teacher presented a clinical case of a patient with a neural dysfunction (tarsal tunnel syndrome) following the traditional methodology of the expository method or master class. It was the teacher who solved the clinical case based on the patient's clinical history data and guided the students through all the steps of clinical reasoning. Student attendance was recorded by counting the number of people connected to the session. In addition, their active participation was registered through the Kahoot gamification tool, by generating three "quizzes" or question and answer games that students answered during the course of the session.

Class n°2 was developed according to the principles of TBL and was structured in three phases:

- Phase 1 "Preparation": this was a phase prior to holding the online class (pre-class) in which the teacher uploaded the theoretical content and the most relevant literature to the Moodle educational platform to solve the clinical case tasks. Students worked on this material independently.

- Phase 2 "Orientation": this phase took place within the online class itself and lasted approximately one hour. It consisted of the following steps:
  - First, the coordinator of the subject performed a test on the students consisting of 10 multiple-choice questions about the contents of the subject previously taught and which constituted the basis for solving the task. This was the "Individual Readiness Assurance Test" (iRAT), a test that students solved individually.
  - Next, students were divided into groups of 5–7 members and the same test was administered again, but this time they solved it as a group. In order for the teams to be homogeneous, the coordinating teacher carried out the distribution taking into account the grades obtained in the iRAT, trying to ensure that the average grades of all the teams were similar.
- Phase 3 "Execution of the task and evaluation": this phase lasted four hours. Each work team was assigned a teacher responsible for presenting the clinical case task and was present during its execution, as a facilitator and support. Once the resolution of the case ended, each team presented the results to the rest of the class.

After the third phase, the following questionnaires were administered via Google Forms:

- Questionnaire to assess participation, attitude, and conflict resolution capacity. This questionnaire gathers both students' self-perceptions and perceptions of colleagues on the before mentioned aspects.

TBL-SAI Questionnaire.

After completion of the subject, the student´s performance was assessed with a theoretical examination consisting of 10 test-type questions about the contents of Class n°1 and 10 test-type questions on Class n°2.

Statistical Analysis

The statistical analysis was performed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). A descriptive analysis of the sociodemographic data was conducted to summarize the main characteristics of the sample. For participants' age, measures of central tendency and dispersion were calculated, specifically the mean and standard deviation (SD). For gender, the number of individuals in each category and their corresponding frequencies were reported.

For the data collected using the Questionnaire to Assess Participation, Attitude, and Conflict Resolution Capacity, as well as the TBL-SAI questionnaire, the percentage of responses for each item within each subsection was reported. In addition, scores were calculated for each of the categories in the TBL-SAI questionnaire: accountability, preference for lecture versus team-based learning, and student satisfaction. Finally, the mean score of the theoretical examination was also reported.

Results

Twenty-four students (n=24) enrolled in the subject of Clinical Reasoning and Evidence Based Practice during the year 2022–23 initially participated in this study. One student (4,17%, n=1) was excluded because he did not actively participate in the classes according to the criteria established in the study. The final sample consisted of twenty-three students (n=23); fifteen of them were male (65,3%, n=15) and eighth were female (34,7%, n=8). Mean age was 25.29 ± 3.84 years.

The percentages of participants` responses to each of the items of the two questionnaires are provided in Tables 1–4.

Table 1 gathers students' self-perceptions on participation, attitude, and conflict resolution capacity and students' colleagues' perceptions on the same items. Nearly two thirds of the students (73,91%) had the self-perception of having performed a relevant contribution to the team in terms of making suggestions for improvement and achieving group goals. Students registered high levels of self-perceived positive attitude, with nearly 70% of the students listening, sharing, and integrating ideas and contributing to unity within the team. Regarding conflict resolution capacity, nearly two thirds of the students (73,91%) considered that they had listened to others' opinions and accepted suggestions. Results of students' colleagues' perceptions on participation, attitude and conflict resolution were very similar to self-perception results.

Table 1 Students' Self-Perceptions on Participation, Attitude and Conflict Resolution Capacity

	Self-Perception (%)	Perception on Colleagues (%)
PARTICIPATION/CONTRIBUTION		
1. The student never offers ideas to carry out the work, nor suggestions for its improvement. Sometimes he/she hinders the proposals of others to achieve the objectives of the group.	0.00%	0.00%
1. The student sometimes offers ideas for getting the job done. But he/she never makes suggestions for improvement. He/she accepts the proposals of others to achieve the objectives of the group.	4.35%	4.55%
1. The student offers ideas for carrying out the work, although rarely offers suggestions for improvement. He/she works hard to achieve group goals.	21.74%	18.18%
1. The student always offers ideas to carry out the work and proposes suggestions for its improvement. He/she works hard to achieve group goals.	73.91%	77.27%
ATTITUDE		
1. The student rarely listens to and shares the ideas of his peers. He/she does not help to maintain unity in the group.	0.00%	1.52%
1. The student sometimes listens to the ideas of his classmates, and agrees to integrate them. He/she is not worried about the union in the group.	0.00%	3.03%
1. The student usually listens and shares the ideas of his colleagues, but does not offer how to integrate them. He/she collaborates in maintaining unity in the group.	30.43%	21.21%
1. The student always listens and shares the ideas of his colleagues and tries to integrate them. He/she finds out how to maintain unity in the group.	69.57%	74.24%
CONFLICT RESOLUTION CAPACITY		
1. In situations of disagreement or conflict, the student does not listen to other opinions or accept suggestions. He/she does not suggest alternatives and finds it difficult to accept consensus or solution.	0.00%	1.52%
1. In situations of disagreement or conflict, the student rarely listens to other opinions or accepts suggestions. He/she does not suggest alternatives for consensus but accepts them.	0.00%	1.52%
1. In situations of disagreement or conflict, the student almost always listens to other opinions and accepts suggestions. He/she sometimes suggests alternatives for consensus or solution.	26.09%	18.18%
1. In situations of disagreement or conflict, the student always listens to other opinions and accepts suggestions. He/she always suggests alternatives for consensus or solutions.	73.91%	78.79%

Notes: Adapted from Mennenga HA. Development and psychometric testing of the team-based learning student assessment instrument. *Nurs Educ.* 2012;37(4):168–172. Available from: https://journals.lww.com/nurseeducatoronline/abstract/2012/07000/development_and_psychometric_testing_of_the.16.aspx.[14]

Table 2 Distribution of Responses to the Items of the "Accountability" Subscale

	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Fully Agree (%)
1. I spend time before class studying in order to be more prepared.	0.00%	0.00%	21.70%	60.90%	17.40%
1. I feel I have to prepare for this class in order to be more prepared.	0.00%	0.00%	8.70%	65.20%	26.10%
1. I contribute to my team members' learning.	0.00%	0.00%	26.10%	65.20%	8.70%
1. My contribution to the team is not important*	17.40%	26.1%	17.40%	30.40%	8.70%
1. My team members expect me to assist them in their learning.	4.30%	8.7%	47.80%	30.40%	8.70%
1. I am accountable for my team's learning.	0.00%	13.00%	34.80%	43.50%	8.70%
1. I am proud of my ability to assist my team in their learning.	0.00%	0.00%	21.70%	65.20%	13.00%

Notes: *Items with inverted scores. Scores are reversed so that high scores become low scores and vice versa. Adapted from Mennenga HA. Development and psychometric testing of the team-based learning student assessment instrument. *Nurs Educ.* 2012;37(4):168–172. Available from: https://journals.lww.com/nurseeducatoronline/abstract/2012/07000/development_and_psychometric_testing_of_the.16.aspx.[14]

The first subscale within the TBL-SAI questionnaire corresponds to the "accountability" subscale. As shown in Table 2, high levels of accountability were reached in terms of preparation for the class and contribution to team members' learning.

Table 3 shows the "preference for lecture or team-based learning" subscale. Around 77% of the students agreed or fully agreed on the fact that they could better recall material and information from TBL activities. Results show a tendency of students to better focus on the current activity when the TBL session was implemented.

Table 4 shows the "students' satisfaction" subscale. In general terms, students showed a good attitude towards TBL activities. 95,6% of the students agreed or strongly agreed on the fact that they are an effective approach to learning.

Table 3 Distribution of Responses to the Items of the "Preference for Lecture or Team-Based Learning" Subscale

	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Fully Agree (%)
1. During traditional lectures. I often find myself thinking of non-related things.	13.00%	30.40%	26.10%	26.1%	4.30%
1. I am easily distracted during traditional lectures.	21.70%	30.40%	30.40%	8.70%	8.70%
1. I am easily distracted during team-based learning activities*.	34.80%	26.10%	34.80%	0.00%	4.30%
1. I am more likely to fall asleep during lectures than during classes that use team-based learning activities.	17.40%	26.10%	30.4%	21.70%	4.30%
1. I get bored during team-based learning activities*.	26.10%	56.50%	13.00%	4.30%	0.00%
1. I talk about non-related things during team-based learning activities*.	30.40%	43.50%	17.40%	8.70%	0.00%
1. I easily remember what I have learned when working in a team.	0.00%	4.30%	26.10%	43.50%	26.10%
1. I remember material better when instructor lectures about it*.	0.00%	0.00%	43.50%	30.40%	26.10%
1. Team-based learning activities help me recall past information.	0.00%	4.30%	17.40%	52.20%	26.10%
10. It is easier to study for tests when the instructor has lectured on the material*.	0.00%	0.00%	8.70%	47.80%	43.50%
11. I remember information longer when I go over it with team members during gRAS (group readiness assurance test) used in team-based learning.	0.00%	0.00%	13.00%	52.20%	34.80%
12. I remember material better after the application exercises used in team-based learning.	0.00%	4.30%	8.70%	52.20%	34.80%
13. I can easily remember material from lectures*.	0.00%	0.00%	30.40%	60.90%	8.70%
14. After working with my team members. I find it difficult to remember what we talked about during the class*.	13.00%	43.5%	30.40%	13.00%	0.00%
15. I do better on exams when we use team-based learning to cover the material.	0.00%	8.70%	30.40%	34.80%	26.10%
16. After listening to the lecture. I find it difficult to remember what the instructor talked about during the class.	13.00%	43.50%	30.40%	13.00%	0.00%

Notes: *Items with inverted scores. Scores are reversed so that high scores become low scores and vice versa. Adapted from Mennenga HA. Development and psychometric testing of the team-based learning student assessment instrument. *Nurs Educ.* 2012;37(4):168–172. Available from: https://journals.lww.com/nurseeducatoronline/abstract/2012/07000/development_and_psychometric_testing_of_the.16.aspx.[14]

Table 4 Distribution of Responses to the Items of the "Students' Satisfaction" Subscale

	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Fully Agree (%)
1. I enjoy team-based learning activities.	0.00%	0.00%	13.00%	47.80%	39.10%
1. I learn better in a team setting.	0.00%	8.70%	26.10%	47.80%	17.40%
1. I think team-based learning activities are an effective approach to learning.	0.00%	0.00%	4.30%	56.50%	39.10%
1. I do not like to work in teams*.	47.80%	26.10%	17.40%	8.70%	0.00%
1. Team-based learning activities are fun.	0.00%	0.00%	17.40%	47.80%	34.80%
1. Team-based learning activities are a waste of time*.	56.50%	30.40%	4.30%	8.70%	0.00%
1. I think team-based learning helped me improve my grade.	0.00%	0.00%	30.40%	47.80%	21.70%
1. I have a positive attitude towards team-based learning activities.	0.00%	0.00%	13.00%	56.50%	30.40%
1. I have a good experience with team-based learning.	0.00%	0.00%	8.70%	52.20%	39.10%

Notes: *Items with inverted scores. Scores are reversed so that high scores become low scores and vice versa. Adapted from Mennenga HA. Development and psychometric testing of the team-based learning student assessment instrument. *Nurs Educ.* 2012;37(4):168–172. Available from: https://journals.lww.com/nurseeducatoronline/abstract/2012/07000/development_and_psychometric_testing_of_the.16.aspx.[14]

Table 5 TBL-SAI Score System and Total Score on Each Subscale

Category	Possible Interval	Punctuation Neutral	Mean	Minimum	Maximum
Accountability	7–35	21	25.57	21	35
Preference for lecture or team-based learning	18–80	48	51.04	41	70
Student satisfaction	9–45	27	32.43	28	40
General scale	32–160	99	109.04	93	142

Note: Neutral punctuation is the sum of midpoint rating of subscale scores.

Total scores on each subscale of the TBL instrument are shown in Table 5, as well as the general score. The mean values of the three subscales were above their neutral punctuation.

Students' performance was assessed by means of a theoretical examination of the contents taught in classes n°1 and n°2. Results were rated in a 0 to 10 grading scale. As shown in Table 6 similar mean grades were obtained in both examinations.

Table 6 Student´s Performance on Theoretical Examination

Examination	Possible Interval	Punctuation Neutral	Mean
Class n°1 (taught according to traditional master class)	1–10	5	8.42
Class n°2 (taught according to TBL methodology)	1–10	5	8.57

Discussion

Learning-focused methods are gaining increasing relevance in the university teaching setting, with studies showing that they are more effective in fostering skills development, self-regulated learning, and student autonomy compared to traditional teaching-centered approaches.[14] Among these methods, TBL has been particularly well-received by students, especially those in current generations who have different needs than those in previous cohorts. Our study seems to support this trend, with students reporting a positive experience with TBL, as reflected in their mean scores being above the neutral score on all scales. This may suggest a positive experience with TBL in terms of accountability (25.57), preference for a learning mode (51.04), and satisfaction (32.43). The general scale average of 109.04 was above the neutral score, and may further reinforces the favourable perception of TBL. This addresses a gap identified in a recent systematic review, which highlighted the need for more research on TBL's impact on self-regulation, autonomy, and satisfaction in health professions education.[20] Our study contributes valuable insights by demonstrating TBL's effectiveness in promoting these factors among physical therapy students within the subject of Clinical Reasoning and Evidence-Based Practice of the Physiotherapy Master's Degree, showing higher levels of satisfaction and engagement with the learning process.

In line with other studies using similar approaches and small sample sizes, such as Armbruster et al,[21] who transitioned traditional biology lectures into all more learning-focused classes with group problem solving, our findings show that TBL fosters high levels of engagement and satisfaction among students. Similarly, previous research by Livingston et. al,[22] and Teixeira et. al,[17] in the physical therapy context shows that students also report positive experiences with TBL, preferring it over traditional teaching methods. The findings from our study appear to lend further support to the constructivist learning principles, which posit that learners actively construct their own understanding and knowledge through experience and reflection. Most participants in our study (73.91%) reported making relevant contributions to their teams, and a similar proportion felt they successfully listened to others and resolved conflicts, demonstrating the active and participatory learning environment advocated by constructivist theory. Additionally, the high levels of accountability observed – where 87.6% of students agreed that they spent time preparing for class and contributed to their team's learning – seem to highlight the effectiveness of TBL in fostering independent learning and responsibility, core tenets of constructivism. Finally, the strong agreement among students regarding the effectiveness of TBL for enhancing clinical reasoning aligns with the idea that learning is best achieved through authentic, problem-centered tasks that promote critical thinking. These studies collectively support the effectiveness of TBL in actively engaging students in team-based applications, fostering both individual and collective knowledge construction. This active engagement aligns with constructivist learning principles, which posit that knowledge is built through experience, interaction, and collaborative problem-solving. Moreover, TBL offers a structured environment that promotes individual accountability and group commitment, enhancing not only academic learning but also transversal skills such as communication, decision-making, and critical thinking. From a motivational perspective, TBL can also be understood through the lens of self-determination theory,[18] as it supports three basic psychological needs: autonomy, competence, and relatedness. These combined mechanisms may help explain the high levels of satisfaction, engagement, and sense of responsibility reported in our study.

Others have previously identified that the shift from traditional, teacher-centered approaches to more student-centered methods like TBL is particularly beneficial in postgraduate education, where students are more receptive to active learning strategies.[20] This shift was evident in our study, as the introduction of a new learning strategy in the first

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semester of post-graduate school was well received by students, who valued the transition from traditional teaching methods used in their undergraduate education.[23]

Regarding students' performance, our study shows similar results in theoretical examination of the contents taught according to master class principles and TBL (mean grades 8,42/10 versus 8,57/10 respectively). Several studies have reported better student performance using TBL compared to traditional learning methods,[15,24] however, several factors are essential for achieving successful learning outcomes in higher education, including the alignment of students' preferred learning methods with the strategies employed by educators.[25] The present study presents some limitations. It was conducted at a single university within the context of a Clinical Reasoning and Evidence-Based Practice course in one out of the four ECTS credits the subject consists of, which may limit the extrapolation of the findings to other academic settings. The reason for this was that that this 10 hour module was taught online making it the most suitable to implement TBL Regarding the questionnaire to assess participation, attitude, and conflict resolution capacity, despite being described as a validated questionnaire, some of the questions seem to have multiple objectives and this could have led to a potential bias. Additionally, the small sample size and the fact that the study was carried out over a single academic semester may further reduce the generalizability of the results to broader populations or different contexts. The sample consists predominantly of males, with fewer females, which could potentially influence the results and limit their generalizability across genders.

According to the results of this study, TBL seems to have multiple practical and theoretical implications implications, including improved student engagement, preparation and responsibility as well as enhanced deep learning, critical thinking and teamwork skills.

Conclusions

Physical therapy students found the TBL strategy used in the teaching of a specific online module of Clinical Reasoning and Evidence Based Practice to be engaging, which enhanced them to become more responsible toward their learning and groups. Students preferred TBL sessions over the traditional method and expressed a high level of satisfaction with TBL. The use of teams as a teaching resource during activities contributed to an overall positive experience. In the context of this study and considering the characteristics and learning preferences, TBL has the potential to enhance the learning experience, support academic success, and improve educational outcomes.

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Disclosure

The authors declare no conflicts of interest in this work.

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