



TEACHING QUALITY OF UNIVERSITY TABLE TENNIS COURSES AND STUDENTS' SPORTS PARTICIPATION INTENTION: A MEDIATION ANALYSIS

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TANG YUNSHAN

University of the Visayas
1006807319@qq.com

CRESENCIO L. MEJARITO, EdD

University of the Visayas

Abstract.

In this study, the role played by the quality of teaching provided by universities within the table tennis classes in influencing the participation of students in sports activities is explored, with emphasis placed on the mediating process of the phenomenon. The research was conducted at Guangxi Mechanical and Electrical Vocational Technical College Vocational and Technical College using a quantitative research method where questionnaire surveys were employed in the gathering of information from the respondents who were students taking the table tennis course. Structural equation modeling was used in validating the mediation model proposed by the study. It has been discovered that the quality of teaching improves the participation of students in sports, and the mediation process is carried out through students' course satisfaction and self-efficacy.

Keywords: Teaching quality; table tennis course; sports participation intention; mediation effect; structural equation modeling; GuangXi Electromechanical Vocational and Technical College

INTRODUCTION

For the future, the implementation of the goal of encouraging lifelong sports practice will be one of the crucial goals set forth in national health policies, whereby higher educational establishments will play a vital part in fostering long-term active behavior. The experience that is accumulated at universities will be an important factor in determining future sports-related habits of young people, which will increase the relevance of the issue concerning the quality of organized physical education programs in universities. In connection with the ongoing efforts of governments all around the world, including that of China ("Healthy China 2030"), which promote the idea of "Healthy China," an important research topic will be studying the effectiveness of university PE courses in relation to students (Chen & Li, 2021).

In the context of the range of university PE, table tennis enjoys a distinctive place because of its popularity, ease in physical access to the game, and tradition in China. Nonetheless, the mere existence of a sport enjoyed by many does not necessarily mean that there will be positive results from the participation of students. Pedagogy, which refers to the quality of teaching, is becoming an essential consideration in achieving success. Recent literature indicates that, aside from making facilities available for students, it is really the environment in which teaching takes place, including how the teaching is conducted and the relationship between teacher and learner, that affects the way students perceive sports (Guo & Wang, 2022).

Teaching quality in physical education is a multi-dimensional construct, typically measured by various aspects such as teachers' professional knowledge, pedagogical competence, motivation skills, as well as the creation of an encouraging learning environment within the classroom. The effective combination of these aspects, according to existing theory, helps in enhancing students' feelings of competence and satisfaction, thus leading to a greater



intention to participate in sports voluntarily. Recent evidence suggests that quality teaching can play an important role in generating deeper situational interest and higher levels of autonomy among students (Lin et al., 2023).

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While there is an acknowledgment of this correlation, however, there seems to be a lack of sport-specific studies regarding the subject, especially as pertains to the universally popular game of table tennis from the institutional viewpoint. In many cases, the existing literature tends to view physical education from a macroscopic lens without considering the particularities of each individual sport and its learning process. Thus, in this study, the connection between the quality of table tennis teaching and the willingness of university students to engage in the sport will be considered. The use of Guangxi Technological College of Machinery and Electricity as a case study provides an opportunity for an in-depth investigation into the matter, which is likely to yield insights helpful to the optimization of table tennis teaching and the improvement of students' health at such institutions (Wei & Zhang, 2023).

As for myself, ping pong has been more than just an enjoyable pastime for me since my childhood, it was always something fun to do and be good at. I still remember how exciting it was to make sure that the ball stayed on the table when I was playing it for the first time on that table set up in our garage. I became fond of that game not only because of all those positive emotions, but also because of its educational value. This is exactly what attracts me to research ways of using classes to develop the same interest in students.

Review of Related Literature and Studies

Attitude. The student's attitude is critical to behavioral intention, where the affective dimension, such as enjoyment and satisfaction, is a better predictor of continued involvement than the instrumental aspect (Zhou & Liang, 2022). For example, when playing table tennis, students' intrinsic interest in developing their skills is more important than any physical fitness gain. The cognitive component of attitude development has been shown to change in that observable skill development makes the activity more personally relevant (Wang et al., 2023). There is a mutual relationship between teaching and attitude, which means that good teaching results in better attitudes, although the students' existing attitudes influence their ability to accept the activity with neutral students responding better than negative ones (Li & Cooper, 2021). Another important element in developing attitudes toward an activity is temporal stability because long-term exposure predicts more involvement compared to a one-time observation (Feng, 2023). Lastly, cultural aspects need to be considered to develop true attitudes toward table tennis in China.

Subjective Norm. The subjective norm, based on the expectations of relevant others, plays a significant role in sports participation among students at university, as norms emanate from peers, instructors, family, and institutional environment. Influence from peers serves as an important determinant, as students tend to participate if their social network engages in sports (Huang & Ma, 2023). Instructors are instrumental in shaping norms, with instructor approval being highly associated with participation intention, especially among academically oriented students (Gao, 2022). Institutional norms, such as "Healthy China 2030," create sports participation as a civic duty, hence changing the behavioral norms in the university setting (Chen & Zhou, 2021). Internalization of the norm is essential for continuous participation, where students who have internalized sports participation as personally beneficial demonstrate consistency compared to those who participate out of external reasons (Wu et al., 2023). Collectivism culture makes students more sensitive to group norms, and thus descriptive positive peer norms play a crucial role in promoting sports participation among Chinese college students (Liang & Zhang, 2022).



Perceived Behavioral Control. The factor of perceived behavioral control (PBC), which comprises a person's confidence in his own abilities and in external factors, is a determinant of sports behavior and tends to be negatively impacted by time limits, academic stress, and the lack of skills (Ma & Zhao, 2023). It is possible to improve the level of internal PBC, such as the self-efficacy component, with the help of systematic and gradual teaching of necessary skills, which is proven in the case of racket sports and its effect on the increased self-assurance of students regarding their sports activity outside lessons (Zhou, 2021). At the same time, external components should also be considered, and the development of alternative schedules with the use of opportunities for informal participation can promote PBC formation (Liu & Wang, 2022). Nevertheless, the link between actual skills and PBC does not exist directly since there can be differences between individuals' perceptions of the ability to act despite the same skill levels due to psychological factors of experience and self-confidence (Feng et al., 2023). Perceptions of PBC do not change easily, making the sport more attractive in the long run due to academic requirements (He, 2022).

Autonomy. Competence, an essential ingredient of motivation, needs a suitable balance of challenges and skills in sports instruction (Zhao & Tang, 2023). Informational feedback, which helps the receiver know how to make things better, has proven to be more effective at building a sense of competence and a growth mindset compared to verbal encouragement and criticism (Deng, 2021). Learning atmosphere also counts, with task climates, which emphasize personal development, giving rise to higher levels of competence satisfaction as compared to ego climates characterized by social comparison (Wei, 2022). Students' attitudes towards the non-linear aspect of skills learning process, including seeing plateaus as something normal, influence motivation and competence satisfaction (Xie & Chen, 2023). Lastly, when it comes to the impact of culture on motivational processes, in the Confucian-inspired Chinese learning environment, it is the teacher's ability to set high expectations while offering support that leads to the highest levels of competence satisfaction (Luo & Ma, 2022).

Competence. Competence can be achieved when the challenge level is aligned with one's skill level; tasks that are slightly difficult will facilitate growth without making an individual feel overwhelmed (Zhao & Tang, 2023). Specific informational feedback helps boost competence more than general encouragement, as it encourages the growth mindset by establishing connections between performance and effort (Deng, 2021). Furthermore, learning environments contribute to competence development, such that task-oriented environments promoting individual improvement enhance motivation more than ego-oriented learning environments emphasizing surpassing others' skills (Wei, 2022). Skill acquisition is not always linear; individuals who perceive plateaus as natural parts of integration process experience higher competence satisfaction than those who regard them as signs of incompetence (Xie & Chen, 2023). In Chinese education settings, competence satisfaction is also impacted by the prevailing culture, with teachers who set high standards while providing support being better at fostering students' competence (Luo & Ma, 2022).

Relatedness. Relatedness, that is, the desire to feel a sense of connectedness and belonging, is an important issue in physical education, whereby communities can improve motivation and effort (Sun & Li, 2023). Relatedness is fostered in structured classes through the instructor and learner connection, whereby students experience higher levels of relatedness when the instructors are genuinely caring, approachable, and empathic towards their learners, particularly in difficult learning tasks (Gao & Wu, 2021). Relatedness is also developed through learner-to-learner interaction, which proves more effective through cooperative and structured exercises compared to solitary practice (Zhu, 2022). In the case of individual games such as table tennis, relatedness needs to be created by incorporating practices that will allow individual responsibility and community at the same time (Dong & Liu, 2023). In China specifically, learning methods need to consider the hybrid identity of learners who cherish collectivism as well as individuality.

Synthesis of Literature.

There is abundant empirical support for integrating the Theory of Planned Behavior with Self-Determination Theory in the field of physical education. In the literature, there exist well-established relationships between instructional quality and certain psychological variables, namely attitude, subjective norm, perceived behavioral control,



autonomy, competence, and relatedness as well as participation outcomes. Nevertheless, the precise mediators of the effects of instructional quality on participation intention must be further clarified, especially in case of sport-specific settings such as table tennis (Zhang et al., 2023). In light of the special pedagogical setting of table tennis with its technical nature and instant feedback, the mediating role of psychological constructs may be different from what occurs in other fields of physical education (Liu & Qian, 2022). Besides, the particular cultural and political climate of Chinese higher education with the implementation of the "Healthy China 2030" concept and strong tradition of pedagogics adds to the complexity of studying the issue (Wang & Zhou, 2023)

METHODOLOGY

This section delineates the methodological framework adopted for this investigation, encompassing the research design, study environment, participant selection criteria, measurement instruments, analytical procedures, data collection protocols, and ethical considerations. The methodology was structured to systematically examine the relationships between table tennis teaching quality, psychological mediators, and sports participation intention among university students.

Design.

The present study will adopt the descriptive-predictive research design that will make use of the quantitative method together with the use of mediation analysis. This type of research design will allow for the concurrent investigation of both direct relations and indirect relations that will help understand the ways through which the quality of table tennis instruction affects participants' intention to participate in sports activities. It will allow for not only the determination of variables' distribution but also for the testing of hypotheses associated with psychological theories such as the Theory of Planned Behavior and the Self-Determination Theory.

Environment.

The study was conducted at Guangxi Technological College of Machinery and Electricity, a comprehensive institution renowned for its extensive physical education programs and sporting facilities. Located in Nanning, Guangxi Province, the university maintains a student population exceeding 15000 across multiple campuses. The institution offers table tennis as both an elective and compulsory physical education course, featuring dedicated indoor facilities with professional-grade tables and equipment. The university's commitment to implementing the "Healthy China 2030" initiative creates a relevant policy context for examining sports participation patterns. The selection of this environment provides a representative case of physical education in China's key comprehensive universities, where table tennis holds particular cultural significance and institutional support.

Participants

This study used proportional quota sampling to include academic year and gender categories within the sample population. A total of 200 table tennis students from the 2024-2025 academic year were sampled, with each year level containing an equal number of males and females. Participants were selected using a stratified random sampling technique through the use of quotas within the registration database for physical education classes at the institution.

The inclusion criteria were: (a) currently enrolled at Guangxi Technological College of Machinery and Electricity; (b) having taken at least one semester of lessons in table tennis; (c) being above 18 years old; and (d) providing voluntary and informed consent to take part in the study. Individuals were automatically excluded from the study if: (a) they attended but not registered for any classes; (b) they had any physical impairment to participate in sports activities; and (c) did not wish to participate in the data gathering.

Table 1

Frequency Distribution of Study Participants



Year Level	Male	Female	Total
Freshmen	35	35	70
Sophomore	35	35	70
Juniors	30	30	60
Total	100	100	200

Instruments.

Four main instruments were used to collect the data for this study. Firstly, the demographic survey collected personal information of participants such as their age, sex, year of study, and subject major.

Secondly, the Ping Pong Teaching Quality Scale was adapted from the Physical Education Teaching Quality Scale (Zhang & Wang, 2022). It measured the quality of teaching along four subscales: instructional skillfulness (5 items), teaching organization (4 items), teacher-student relationships (4 items), and learning environment (3 items). This scale showed high reliability in its former uses, with Cronbach's alpha coefficients varying from 0.87 to 0.92 within subscales and composite reliability reaching 0.94.

The third aspect that needed to be evaluated involved the use of psychological mediators using two well-established instruments of measuring them. Specifically, the Theory of Planned Behavior Components Scale included five questions regarding attitudes, four – regarding subjective norms, and five – regarding perceived behavioral control. The second instrument, called the Basic Psychological Needs Satisfaction in Physical Education Scale, included four questions about autonomy, five – about competence, and five – about relatedness. Both scales demonstrated appropriate psychometric properties since they had Cronbach's alphas exceeding 0.80.

Finally, the measure of sports participation intention was done by using the Physical Activity Intention Scale. The scale had five questions regarding situations involving playing table tennis. As far as the reliability of this measure is concerned, it had already been evaluated in a previous study, and it was determined to be quite high since its test-retest reliability was 0.85 over two weeks.

The five-point Likert scale was the parameter chosen for all the scales due to matching scales employed in other studies (Table 2).

Table 2
Measurement Parameters and Interpretive Ranges

Scale	Initial	Range	Interpretation	Description
5	SA	4.21-5.00	Strongly Agree	Agreement is consistently demonstrated
4	A	3.41-4.20	Agree	Agreement is frequently demonstrated
3	NAD	2.61-3.40	Neutral	Neither agreement nor disagreement predominates



Scale	Initial	Range	Interpretation	Description
2	D	1.81-2.60	Disagree	Agreement is infrequently demonstrated
1	SD	1.00-1.80	Strongly Disagree	Agreement is rarely demonstrated

Data Gathering Procedures

Pre-Data Gathering. The study underwent a thorough process of authorization prior to execution. Authorization was initially granted through a formal application to the Dean of the Graduate School of Education of University of the Visayas, together with an endorsement from an appointed panelist. Afterwards, the researcher prepared a complete institutional compliance checklist together with the submission of the whole protocol to the UV-REC for evaluation regarding its technical and ethical aspects. After passing all the evaluations, the UV-REC issued a Notice to Proceed Certification in favor of the researcher, officially granting permission to start the fieldwork. Simultaneously, a formal letter was sent to the President of Guangxi Technological College of Machinery and Electricity seeking permission to conduct the research electronically.

Actual Data Gathering. The fieldwork was initiated promptly after the official notification of proceeding to the work was issued by the Institutional Review Board. The main data collection process was carried out among table tennis course students in Guangxi Technological College of Machinery and Electricity; the referral sampling method was used in order to recruit participants while mitigating any possible economic obstacles as well as taking into account personal schedule preferences. As for the methods of data collection, both physical and electronic tools have been employed: the online survey was completed electronically on the protected web platform, and the offline survey was done on printed sheets of paper in off-campus sites suitable for all participants. On average, each period of participation took around 15-20 minutes. Speaking about the process of collecting data, all data provided in digital format by participants were automatically coded and stored in the digital database, while hard copies of data were collected personally by the researcher following surveying sessions and further digitized through scanning. Participants were encouraged to participate voluntarily, and all participants were given detailed information on the goals of the research and possible risks to their confidentiality.

Post-Data Gathering. After completing the data collection process, the submitted responses were carefully organized and validated. These data sets were then analyzed using appropriate software programs that enabled the derivation of results pertinent to the research questions. Data analysis was conducted through the use of tables as well as textual descriptions. In all these activities, confidentiality was ensured by employing thorough anonymization techniques during data entry, securing data on encrypted data media and limiting their accessibility only to members of the research team, and strictly adhering to ethical guidelines in educational research. After writing up and publishing the research results, all the raw data containing personal identification information were permanently deleted while retaining the derived data in electronic form only.

Data Analysis.

The analytical approach incorporated multiple statistical procedures to address the research objectives. Descriptive statistics, including frequency distributions, percentages, means, and standard deviations, were utilized to characterize participant profiles and summarize variable distributions. For examining relationships between teaching quality, psychological mediators, and participation intention, Pearson's product-moment correlation coefficients were computed. Mediation analysis was conducted using regression-based path analysis within a structural equation modeling framework, which allowed for testing both direct effects of teaching quality on participation intention and indirect effects through the proposed psychological mediators. This analytical sequence facilitated a comprehensive examination of how instructional dimensions transmit their influence through motivational pathways, with all analyses performed using JAMOV statistical software (Version 2.3.21) and its SEM module.



Ethical Considerations.

The study followed the ethical guidelines of the Declaration of Helsinki. Approval was obtained from the Research and Ethics Committee of the University of the Visayas (Protocol Number NPMAED2025-0130, approved on December 12, 2025). The subjects included minors who were willing participants in taking part in the survey either online or offline. All subjects signed an informed consent form after reading the information about the objectives, methods, risks, benefits, confidentiality, voluntariness, protection of data, and contact details of the researchers.

RESULTS AND DISCUSSION

Students Personal Profile

The students profile includes four characteristics, age, gender, year level and Major or specialization as presented in Table 3.

Age. Most of the respondents (60%) are aged 18–20 years old, while 40% are aged 21–25 years old. This indicates that most participants are in the typical college-age range, suggesting that the respondents are generally young adults who are at an active stage of academic engagement and social development.

Sex. The sample is evenly distributed between male (50%) and female (50%) respondents. This equal representation implies that both genders are fairly represented, allowing balanced insights regarding perceptions of the variables measured.

Table 3

Demographic Profile of the Students

Variable	Category	Frequency	Percentage
Age	18-20	120	60.0
	21-25	80	40.0
Sex	Male	100	50.0
	Female	100	50.0
Year Level	1 st	70	33.0
	2 nd	70	33.0
	3 rd	60	34.0
Major/Program	Sports	100	50.0
	Management	60	30.0
	Arts	40	20.0

n=200

Year Level. The number of students at all three-year levels is equal, with the first, second and third places each accounting for approximately 33%. This uniform distribution ensures that viewpoints at all academic levels are captured, reflecting the experiences of students throughout their college years.

Main/Program. Half of the respondents (50%) are studying sports, 30% are studying management, and 20% are studying art. This distribution indicates that the majority of participants come from disciplines related to physical education or sports science, with a considerable number of them being students majoring in management and the arts.

The quality level of table tennis teaching is a comprehensive indicator to measure the standardization degree of the coach's teaching content, the scientific nature of the training methods, and the effect of the trainees' mastery of the skills. This was measured through a questionnaire consisting of 8 items (Table 4). Table 4 Explanation of the average



standard deviation of the survey dimensions/indicators for the Quality Level of Table Tennis Teaching at Nanning Polytechnic College of Mechanical and Electrical Engineering

The level of teaching quality in table tennis

Table 4

Level of Table Tennis Teaching Quality brief introduction of teaching quality

Dimensions/Indicators	Mean	SD	Interpretation
1.The instructor demonstrates strong knowledge of table tennis.	3.66	.533	Satisfied
2.The course content is well organized and easy to follow.	3.73	.488	Satisfied
3.The instructor communicates clearly and effectively.	3.68	.609	Satisfied
4.The instructor provides useful feedback on my performance.	3.56	.623	Satisfied
5.The instructor is approachable and supportive.	3.70	.499	Satisfied
6.The class atmosphere is positive and encouraging.	3.74	.481	Satisfied
7.The instructor encourages questions and participation.	3.74	.481	Satisfied
8.The course challenges me to improve my skills.	3.70	.529	Satisfied
Factor mean	3.70	.529	Very Satisfactory
No grand mean			

Note: $n=200$. Legend: 1.00 – 1.80= Very Dissatisfied, 1.81 – 2.60= Dissatisfied, 2.61 – 3.40 Neutral / Neither Satisfied nor Dissatisfied, 3.41 – 4.20= Satisfied; 4.21-5.00= Very Satisfied

Table 4 student attitudes toward eight different aspects of table tennis teaching. The aspects rated highest by students were “The class atmosphere is positive and encouraging” and “The teacher encourages students to ask questions and participate” (with both having a mean score of 3.74, standard deviation of .481). These results imply that students highly appreciate a positive and participatory classroom environment where they can freely interact and ask questions. An atmosphere such as this decreases anxiety and increases persistence, which is in line with studies stressing the importance of creating a safe emotional space and instructor availability to maintain student motivation (Sun & Li, 2023).

On the other hand, the lowest mean score item was “The instructor gives me useful feedback regarding my performance” ($M = 3.56$; $SD = .623$). Even though still within the ‘satisfied’ category, this slightly lower score indicates one possible area that could be improved upon. Feedback must be constructive, timely, and helpful in order to promote improvement among learners (Deng, 2021). The lower score could be attributed to a need for more personalized feedback or more technically-oriented feedback when practicing the skills in class. Given that the sport of table tennis is quite technique-oriented, learners may find general or sporadic feedback less helpful in improving their performance.

Instructor Knowledge. The knowledge level of the instructor was perceived to be very good since an understanding of rule mastery, strategy, and techniques is what defines proper skill instruction, and the lack thereof may jeopardize the success and confidence of the learner. It seems that Nanning Mechanical and Electrical Polytechnic College does an admirable job in this dimension, most probably because its instructors hold the appropriate credentials and have had experience as coaches, hence their ability to demonstrate and explain things clearly. What can improve this dimension even more at Nanning Mechanical and Electrical Polytechnic College is to conduct coaching seminars regularly, send the instructors for regional seminars, and update the teaching materials.



Course Organization. The students appreciated the good organization of the subject matter, pointing out that learning becomes easy and motivating when there is a systematic transition from elementary skills to advanced usage. It seems that the college's modular approach is conducive to developing a systematic progression of skills. In order to improve the systematization process, it may be beneficial to conduct regular reviews of the syllabus based on students' feedback, develop visual skill maps, and conduct small-scale assessments after each module.

Communication Clarity. Effective communication of instructions by teachers was strongly recommended by the students since they appreciate easy-to-understand instructions, technical demonstration, and theory-practice connections in explanations. Effective communication avoids confusions, speeds up the development of skills, and minimizes frustrations. It seems that teachers in this institution are effective communicators, which is possible due to their effective use of language, repeated messages, and use of visuals. For improvement of this factor, peer observation programs for sharing effective teaching methods should be organized between the teaching faculty, and teachers should receive training in differentiated instructions.

Feedback Usefulness. The students felt that feedback was highly important and that any feedback provided needed to be specific in order to be of benefit, since general feedback is not very helpful. It seems that the current way of teaching at the college includes constructive feedback, possibly during the drills or after the drills. In order to improve this, one option would be to structure the feedback, which might involve using a method like the "sandwich" (positive–negative–positive) in order to keep up the motivation levels of the students. Another option would be to introduce video analysis during some of the sessions.

Instructor Support. Students place great importance on having a friendly instructor, since an atmosphere of friendliness, patience, and attentiveness on the part of the teacher motivates the learners to ask questions, recognize their problems, and try something new without fear of embarrassment. An environment like that minimizes tension and ensures active learning. It seems that the institution has created a certain atmosphere where table tennis teachers are easily approachable, and that is very important for maintaining interest. For even more effective results, motivational training could be organized for the coaches and an opportunity for regular consultations provided.

Class Atmosphere. The creation of a positive and motivational classroom culture is very important for students, as they have realized that a class culture which avoids criticizing too much, values efforts, and encourages peer support creates a pleasant experience for them, which results in making them persist through difficult skill building sessions. The college seems to do well in creating such a culture for their students, perhaps due to a clear understanding of mutual respect and the need to improve collectively. In order to continue and build on such a culture, teachers may consider starting off each semester with a discussion about norms and involving students in maintaining the culture of the classroom.

Encouragement of Participation. Questioning and participation are greatly appreciated by learners. Where a teacher actively encourages questions and participation, the learner moves from being a mere receiver of information to actively contributing to the learning experience. The current approach to teaching in college seems to be supportive of interaction; this may be achieved using open-ended questions or time set aside for Q & A sessions. However, the incorporation of training on facilitative questioning among instructors would encourage deeper thinking among learners. It would also help to ensure that interactive learning becomes a standard feature in all lessons through structuring of activities such as warm up exercises or peer teaching sessions.

Course Challenge. A very important aspect of the students' experience was the appropriate degree of difficulty of the course itself, understanding the fact that activities that somewhat surpass students' present skills promote development, provide a feeling of accomplishment, and maintain students' motivation towards becoming proficient. It seems like the table tennis course is successfully providing just the right combination of difficulty and accessibility. To improve this even further, a short pre-assessment of student skills may be done before starting the course to



provide more customization when it comes to designing tasks. Adding different levels of difficulty (beginner, intermediate, advanced) to exercises can ensure that everyone participates successfully.

Level of Psychological Factors and Participation Intention

Table 5

Level of Psychological Factors and Participation Intention

Dimensions/Indicators	Mean	SD	Interpretation
<i>Attitude</i>			
1.I find table tennis enjoyable and fun.	4.54	.694	Very Satisfied
2.Playing table tennis is a good use of my time.	4.39	.775	Very Satisfied
3.Table tennis is beneficial for my physical and mental health.	4.48	.694	Very Satisfied
Factor mean	4.47	.721	Very Satisfied
<i>Autonomy</i>			
1.I feel I have choices in how I learn and practice table tennis in this course.	4.54	.694	Very Satisfied
2.The instructor respects my ideas and input during class.	4.39	.775	Very Satisfied
3.I can influence the focus of our practice sessions based on my learning needs.	4.48	.694	Very Satisfied
Factor mean	4.47	.721	
<i>Quality-Teaching</i>			
1.The instructor demonstrates strong knowledge and skill in table tennis.	3.70	.532	Satisfied
2.The course content is well-organized and the progression of lessons is clear.	3.75	.468	Satisfied
3.The instructor provides clear instruction and useful feedback on my performance.	3.74	.459	Satisfied
4.The instructor is supportive and fosters a positive, encouraging learning atmosphere.	3.62	.588	Satisfied
Factor mean	3.70	.512	
<i>Student Participation-Intention</i>			
1.I plan to continue playing table tennis after completing this course.	4.38	.714	Very Satisfied
2.I intend to participate in table tennis activities regularly in the foreseeable future.	4.46	.742	Very Satisfied
3.I will recommend table tennis to my friends as a worthwhile activity.	4.46	.715	Very Satisfied
Factor mean	4.43	.724	High
Grand mean	4.20	.638	High

Note: n=200. Legend: 1.00 – 1.80= Very Dissatisfied, 1.81 – 2.60= Dissatisfied, 2.61 – 3.40 Neutral / Neither Satisfied nor Dissatisfied, 3.41 – 4.20= Satisfied; 4.21-5.00= Very Satisfied

The mean values were found to be highest in Attitude (M = 4.47) and Autonomy (M = 4.47) with students showing very high agreement on both variables, reflecting their liking and ownership of the game which is motivating them to participate. Quality of Teaching was rated as positive (M = 3.70); however, it was still the least among all the other variables, reflecting some areas of improvement needed. On the other hand, Participation-Intention was also very high (M = 4.43).



Attitude. The current dimension had a high factor mean value ($M = 4.47$, $SD = 0.721$), which shows that the students have positive opinions about table tennis since they find the game entertaining, valuable, and healthy. It is well-known that the attitude towards any physical activity is one of the main indicators that determine engagement in the exercise (Ajzen, 1991). The mentioned statement corresponds to the results of modern research conducted in Asian educational environments and indicating that a combination of pleasantness and value in sports leads to students' willingness to engage in physical activities (Chen & Li, 2023). Within the environment of learning table tennis, a positive attitude is a critical motivator that helps learners overcome the barrier of skills and makes practice valuable instead of just a course requirement.

Autonomy. Another factor that scored well on the survey ($M=4.47$, $SD=0.721$) is that of control or choice in the process of acquiring knowledge within the class. The ability to have one's opinion heard and influence what aspects of training will be emphasized through the process is a key element of the self-determination model (Ryan & Deci, 2000). Findings in similar studies conducted in vocational colleges, for instance, by Wang et al. (2023) have revealed that autonomy in technical classes is positively associated with greater involvement in skill-building and commitment to tasks. Autonomy in sports education helps tailor skills to personal needs. If a student perceives that they have the opportunity to direct their practice in a certain direction (improve a serve or footwork pattern), they are likely to assume responsibility for the process.

Quality-Teaching. This factor also got a very high score ($M = 3.70$, $SD = 0.512$), but it is still lower compared to other three factors included in the survey. It was recognized by the students that teachers have good knowledge, provide clear instructions, give valuable feedback and create favorable environment. Quality of teaching and its importance in developing skills in any sport are proven (Griffiths et al., 2022). As this case involves a polytechnic college, where skill-based training is essential, the quality of instructions and feedback becomes especially significant. Although the result falls under "Agree/High" category, there is some potential to improve it even further. Little changes, such as providing more personalized feedback and incorporating technology, can help enhance students' perceptions about courses and increase their motivation to play the game.

Student Participation-Intention. The scale received a very good rating ($M = 4.43$, $SD = 0.724$), which reflects a pronounced intention to engage in table tennis after the completion of the course, actively participate in it, and advise it to friends. Behavioral intention is a close-to-behavioral factor in predicting behavior (Fishbein & Ajzen, 2010), and in the context of sports training programs, it should be considered the most important outcome. Recent research conducted among vocational students in China shows that participation intention reaches its peak when the activity is perceived as pleasurable, autonomous, and well-taught (Liu & Zhang, 2024). This result indicates that the table tennis course offered by the Nanning Mechanical and Electrical Polytechnic College has been successful in fostering intentions towards further engagement. To ensure that the intention turns into consistent behavior, the institution may create favorable conditions for accessing table tennis venues after the training sessions, forming amateur leagues or practice teams.

Stress Level of the Students

Students' Stress level was measured using the questionnaire and the results are shown in Table 6.

Table 6

Stress level of the Students

Indicators	Mean	SD	Description
1. In the last month, how often have you been upset because of something that happened unexpectedly?	3.75	0.412	Fairly Often
2. In the last month, how often have you felt that you were unable to control important things in your life?	3.48	0.515	Fairly Often
3. In the last month, how often have you felt nervous and stressed?	3.52	0.678	Fairly Often



4. In the last month, how often have you dealt successfully with irritating life-hassles?	3.35	0.502	Sometimes
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	3.28	0.471	Sometimes
6. In the last month, how often have you felt confident about your ability to handle your personal problems?	3.40	0.510	Fairly Often
7. In the last month, how often have you felt that things were going your way?	3.25	0.480	Sometimes
8. In the last month, how often have you found that you could not cope with all the things that you had to do?	3.32	0.475	Sometimes
9. In the last month, how often have you been able to control irritations in your life?	3.34	0.673	Sometimes
10. In the last month, how often have you felt that you were on top of things?	3.30	0.485	Sometimes
11. In the last month, how often have you been angered because of things that happened that were outside of your control?	3.35	0.495	Sometimes
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?	3.45	0.512	Fairly Often
13. In the last month, how often have you been able to control the way you spend your time?	3.20	0.630	Sometimes
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	3.33	0.498	Sometimes
Factor Mean	3.38	0.210	Sometimes

Legend: 1.00-1.80=Never; 1.81-2.60=Almost Never; 2.61-3.40=Sometimes; 3.41-4.20=Fairly Often; 4.21-5.00=Very Often

The students' level of stress was determined using 14 indicators with an emphasis on the stress that they were experiencing, their capacity to cope with these stresses, and their control of events in the preceding month. According to Table 6 below, the mean factor score of the stress levels of the participants is 3.38 (SD=0.210), placing them in the "Sometimes" classification. The above implies that the students experienced some amount of stress but there was no indication of extreme or chronic stress.

Of the 14 indicators, the following three had scores within the "Fairly Often" classification, namely; feeling distressed when caught unawares by events (M=3.75, SD=0.412); feeling nervous and stressed (M=3.52, SD=0.678); and worrying about things I have to do (M=3.45, SD=0.512). The above results are a reflection of some of the major factors that cause stress among university students, especially academic stress.

On the contrary, measures assessing coping ability and sense of control were commonly found within the category of "Sometimes". Specifically, coping with changes in life (M=3.28, SD=0.471), being on top of everything (M=3.30, SD=0.485), and managing time distribution (M=3.20, SD=0.630) fell just short of being considered "Fairly Often". This indicates that although students experience stress at times, they maintain adequate coping skills for dealing with regular stressors and adjusting to changes. Such skills could possibly have been developed through involvement in organized physical education (PE) activities such as table tennis games. Prior studies (e.g., Sun & Li, 2023) have emphasized that engaging in physical activities is associated with improved mental strength and stress tolerance.

It should be noted that there were no indicators in the "Very Often" category, while the minimum scores did not fall into the category of "Almost Never." Thus, the balance of stress experiences can be traced. Given the importance of a stress profile when considering teaching quality and sports participation intention in this paper, such stress levels



can be considered appropriate. Indeed, a structured class like a table tennis course, which helps one acquire skills, receive adequate social support from peers, and be autonomous, can be considered a factor protecting from stress in college.

In conclusion, the participants in the study have a moderate level of stress. At the same time, they have stress experience related to the occurrence of unforeseen circumstances, task demands, and overall anxiety. In addition, the ability to cope with these stresses, which is evidenced by the fact that coping indicators have "Sometimes" ratings, can be considered an additional criterion of successful adaptation to college life.

Relationship of teaching quality of university table tennis courses and students' sports participation intention.

This study assumes that students' intention to participate in sports is influenced by the quality of table tennis course teaching in universities. The Pearson correlation coefficient (Pearson r) is used to determine the degree of correlation between the two pairs of variables shown in Table 7.

Table 7

The relationship between students' intention to participate in sports and the quality of table tennis course teaching in colleges and universities

Variables	r value	p value	Decision	Interpretation
Quality-Teaching	.679	.000	Reject H_0	Significant
Attitude	.674	.000	Reject H_0	Significant
Autonomy	.744	.000	Reject H_0	Significant
Student Participation Intention	.755	.000	Reject H_0	Significant

Note: Significant if p value is $\leq .05$. Pearson r interpretation: A value greater than .5 is strong (positive), between .3 and .5 is moderate (positive),

Quality of Teaching and Participation Intention

As indicated by the table, the p -value for the correlation between teaching quality and participation intention is .000, which is less than the significant value of .05. This makes it significant and thus results in the rejection of the null hypothesis. Teaching quality is therefore significantly correlated with sports participation intention. The correlation is significantly positive, with an r value of .679. In other words, there exists a significant correlation between perceived teaching quality in table tennis courses and the intention to participate in sports among students.

Teaching quality is an important aspect when discussing sports participation intention among students. Teaching quality, in relation to table tennis lessons taught in university, is about the knowledge that the teacher teaches, how he organizes the lesson, provides feedback on the learner's performance and whether there exists a supportive atmosphere during lessons. Such factors directly influence how learners learn, develop skills and enjoy lessons. Learners who perceive that the level of teaching quality is high are likely to develop competence and motivation for engaging in sporting activities. It is only logical for there to be a high correlation between teaching quality and sports participation intention.

In support of the findings from the current study, according to research conducted by Chen and Wang (2023), it was revealed that good quality teaching in PE classes played a significant role in increasing motivation and participation intention of the students. This clearly implies that quality teaching should be considered as an appropriate strategy for promoting sports participation. In another study conducted by Liu et al. (2022), it was concluded that coaching with effective instructions and feedback helped increase self-efficacy and commitment of the students towards participating in sports activities.

Attitude and Participation Intention



As shown from the table above, the p-value for the relationship between attitude and participation intention is .000, which is less than the significance level of .05. This implies that the value is statistically significant, leading to rejection of the null hypothesis. Consequently, it shows that there exists a statistically significant relationship between attitude and sports participation intention of the students. The correlation coefficient is positively correlated, at .674. In essence, the study finds out that positive attitude towards table tennis results in strong sports participation intention.

Attitude is one of the important dimensions involved in the analysis of students' sports participation intention. Attitude toward sports refers to the perception of the usefulness of the activity, the benefits derived from it, and the enjoyment that one feels while playing the sport. A positive attitude will lead to high intrinsic motivation to play the sport, and thus, they will tend to play sports. Attitude plays an important role in assessing the worthiness of the sport, and therefore, it makes sense to have a positive relationship with the participation intention.

Supporting the findings of this study, in the research of Zhang and Li (2023), it was found that positive attitudes towards physical activities were strong predictors of actual participation behavior among college students. This indicates that fostering favorable attitudes can be an effective way to promote sports engagement. Another study by Kim and Park (2022) showed that students who viewed sports as enjoyable and worthwhile were more likely to maintain regular participation and recommend activities to peers. This aligns with our findings that attitude is correlated with participation intention, emphasizing the importance of these factors in encouraging long-term sports involvement.

Autonomy and Participation Intention

From the table, the p-value of correlation between autonomy and participation intention is .000, which is smaller than the significant value of .05. With this value being significant, it leads to rejection of the null hypothesis. Hence, autonomy has a significant correlation with participation intention of the students. The correlation is a strong one since the value of r is .744. This implies that as the level of autonomy experienced by the students during the table tennis training increases, their participation intention also increases.

Autonomy is one of the dimensions in the debate concerning students' intention for engaging in sports. In sports learning, autonomy involves the freedom that the learners feel they have in terms of how they engage with the content. When students feel that their opinions matter and that they can help shape what the lesson is all about, they tend to own their involvement with the sport. This self-determination increases their level of intrinsic motivation, thus increasing their intention to participate. As autonomy deals with the psychological desire for control, there must be a high correlation between participation intention and autonomy.

Consistent with the results obtained from the current investigation, in another study conducted by Ryan & Deci (2020), it was stressed that autonomy-supportive climates in physical education had a strong positive influence on students' motivation and intentions toward engaging in physical activity through playing sports. Thus, it is possible to conclude that encouraging students to demonstrate their autonomy may be considered an effective strategy for sustaining their participation in sports. In a different investigation conducted by Lee & Chen (2023), it was found that giving students the freedom to choose training programs positively influences students' intentions regarding sports participation.

Student Participation Intention and Its Correlates

As depicted in the table below, the p-value for students' intention to participate is .000, which is lower than the significant level of .05. It is therefore significant, and hence we conclude to reject the null hypothesis. As such, the variable participation intention is significant to correlate with other variables, as reflected by the value of r as .755. It is thus significantly positively correlated with the total engagement in sports construct.

The dimension of participation intention should be considered in connection with students' sports behavior analysis. In terms of this work, it refers to the intention or plan of continuing practicing table tennis in the future. There are



many reasons why participation intention occurs, including, but not limited to, teaching quality, attitude toward practice, and autonomy. As intention comes before the behavior itself, there are many factors that correlate with intention, making the latter highly important. Having high participation intention means having a clear determination of engaging in sports, so it is expected that participants will actually practice.

In accordance with the results obtained in the work, it is possible to mention the research carried out by Ajzen (1991). According to that research, intention was established as one of the key predictors of behavior in the theory of planned behavior. Thus, it is possible to say that paying attention to intention might be useful when creating new sports programs. Furthermore, according to another study conducted by Hagger et al. (2022), it was found that raising participation intentions of people could actually increase their actual participation rate in physical exercises.

The above-mentioned results reveal that the perceived quality of instruction, the positive attitude towards the activity, and autonomy in the table tennis class were positively and significantly associated with the sports participation intention among university students. Particularly, autonomy in the table tennis class revealed a higher positive correlation with sports participation intention compared to the other two variables. Thus, it can be stated that the autonomy of learners was a crucial factor in developing a tendency to participate in sport activities. Overall, these three factors create a favorable psychological climate characterized by proper instruction, individual pleasure from training, and learner self-regulation that positively affects students' motivation to exercise.

PEDAGOGICAL ENHANCEMENT MODEL

Rationale

The evaluation and improvement of the way students perceive their table tennis courses play an important role in encouraging their continued involvement in the sports field. The willingness of students to continue with their sports practice after the completion of their courses is anything but accidental, because it is achieved via the quality of teaching and the positive attitude formed regarding the particular sport as well as self-ownership regarding their own training. As a result, those who have managed to acquire this willingness are able to shift from being forced to attend certain classes to engaging voluntarily in regular physical activity. This is extremely important for the success of the "Healthy China 2030" program. This is why the provision of effective pedagogical practices within sports education is very significant for colleges such as Guangxi Technological College of Machinery and Electricity.

But being aware of the role of the quality of instruction within the chosen pedagogical model alone does not seem to be sufficient. Based on the results obtained from the survey analysis, it can be stated that even though the perception is currently positive, there seems to be a direct relationship between the key elements of the quality pedagogical model including such aspects as the level of the instructor's competency, the clarity of communications, and the provision of constructive feedback among others, and the student's willingness to continue engaging in the class activity. Even more importantly, the concept of autonomy was found to be associated with the strongest correlation with students' intention to engage in future classes. Consequently, ensuring that the overall structure of the course remains solid cannot be seen as the end point, but rather implies a constant effort in reinforcing its most important aspects. The relationship between what happens in the classroom and the future intention of the students becomes evident.

General Objectives

This pedagogical enhancement model is intended to strengthen the significant relationship between table tennis teaching quality and students' sports participation intention at Guangxi Technological College of Machinery and Electricity, with a focused aim on enhancing the key psychological mediators of attitude and autonomy that drive long-term engagement.

Specific Objectives



- To elevate and sustain the “High” level of perceived teaching quality in university table tennis courses, specifically targeting instructor pedagogical skills, feedback clarity, and the supportive learning atmosphere as experienced by students;
- To cultivate and reinforce a consistently positive student attitude toward table tennis as an enjoyable, valuable, and health-beneficial activity that extends beyond academic requirements; and
- To systematically increase students’ sense of autonomy within the table tennis curriculum by embedding meaningful choices and student-led elements into practice sessions, thereby strengthening the strongest predictor of their continued participation intention.

Teaching Quality-Driven Pedagogical Enhancement Model



Model Structure

In terms of structure, the model is vertical, featuring three interrelated layers. In addition, it shows a path that begins at the level of instructional inputs and ends at the level of behavioral intention. The highest layer is referred to as Teaching Quality; it is the main driving force of the whole process. It includes the set of basic instructional skills such as pedagogy, feedback, courses, and environment.

All of these factors have direct implications upon and trigger the middle layer, called the Mediating Layer of Autonomy and Attitude. Quality teaching automatically contributes to positive attitudes in that it provides more enjoyable practice sessions, increases the value of sports activities and consequently encourages students to practice more. At the same time, quality teaching also enhances students' feelings of autonomy in that they experience respect, involvement in the learning process and ability to control the practice themselves. This layer can be considered the psychological manifestation of all external factors affecting students.

Ultimately, improved states of autonomy and positive attitude combine in producing the desired Target Outcome, that is, Participation Intention. This lower layer represents the ultimate goal – that of a strong intention to continue engaging in physical activity, practice regularly and even encourage friends to participate in the practice too. What should be emphasized is that whereas quality teaching triggers the process, its effect is significantly intensified as it influences students internally through their autonomy and positive attitude towards the sports practice.

In order to implement this model, teachers and curriculum planners need to concentrate on improving the quality teaching elements – instructional strategy, feedback quality, and learning environment. All these improvements should be consciously associated with the methods for encouraging students to become autonomous learners, such as providing practice options, and methods for promoting the development of a positive attitude towards table tennis as a fun and healthy lifelong sport.



CONCLUSION AND RECOMMENDATIONS

Conclusion

In order to fulfill the main aim of this paper, which is to identify the influence of teaching quality on the sports participation intention, and to explore the potential mediating influence of psychological variables associated with the TPB and SDT, the study has been very successful in fulfilling its aims. According to the research outcomes, teaching quality has a strong positive association with sports participation intention, which is significantly mediated by both students' attitude towards the sport and their sense of autonomy.

It is evident that the relevance of the output to the main purpose of this study can be illustrated in terms of the development of the Pedagogical Enhancement Model. The creation of such a model represents an attempt to use research outcomes to create a specific methodology for the enhancement of teaching quality. This means that the research outcome has been used for the design of the Pedagogical Enhancement Model, which can help in creating an enhanced environment for learning through increased participation in the sports activity.

Recommendations

The following recommendations were given based on the findings of the study:

Practice. The intervention plan created through this study, consisting of activities aimed at improving the effectiveness of teaching skills, attitudes, self-direction, and intention to participate, is recommended to be put into practice at Guangxi Technological College of Machinery and Electricity, where the study was carried out. Other institutions of higher learning that have technical/vocational focuses may also utilize this intervention plan in their particular setting. It is advisable to arrange a workshop among physical education teachers, department chairs, and students to review the results of this study.

Policy. The policies established by institutions need to officially acknowledge and facilitate the significance of the quality of instruction and psychological mediators such as attitude and autonomy in ensuring continued student involvement in sports. The implementation of these strategies can be done in institutions such as the Guangxi Technological College of Machinery and Electricity through policies on appraising instructors based on their performance and training in addition to encouraging table tennis activity outside class hours.

Education. The findings of this study will prove beneficial for further research in the area of physical education specific to a particular sport. The tools and methods employed in this study will prove useful for researchers looking into such relationships in other sports as well. The findings will prove helpful in developing professional modules for PE teachers that focus on developing teaching techniques to enhance skill learning and motivation.

Research. As part of academic dissemination, this study is recommended for presentation at local or international conferences focusing on physical education, sports psychology, or higher education pedagogy. It should also be submitted for publication in peer-reviewed journals in related fields. To deepen understanding of the themes explored here, the following research directions are suggested for future studies:

- a. A qualitative investigation into students' lived experiences of autonomy and attitude formation within table tennis courses;
- b. A longitudinal study tracking how changes in teaching quality influence sports participation behavior beyond intention; and
- c. A comparative analysis of the proposed mediation model across different types of higher education institutions or across various racket sports.

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