European Journal of Physical Education and Sport Science
ISSN: 2501 - 1235
ISSN-L: 2501 - 1235
Available on-line at: www.oapub.org/edu

DOI: 10.46827/ejpe.v13i3.6710 Volume 13 | Issue 3 | 2026

# DEVELOPING CRITERIA TO EVALUATE THE POSITIVITY IN STUDYING PHYSICAL EDUCATION COURSES FOR UNIVERSITY STUDENTS IN QUANG NGAI PROVINCE, VIETNAM

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**Abstract:**
Proactivity in learning is the learner's initiative, self-discipline, and effort in the process of acquiring knowledge and completing learning tasks. This is an important factor that contributes to enhancing learning effectiveness, developing self-learning abilities, and forming a positive learning attitude among students. The purpose of the research is to establish criteria for evaluating positivity in physical education learning for students at universities in Quang Ngai Province, Vietnam. The purpose of the research is to develop criteria for evaluating the positive aspects of studying physical education courses for university students in Quang Ngai Province, Vietnam. The study uses standard methods in physical education research, such as literature reviews, interviews, and statistical analyses, to achieve its research objectives. Research subjects: 12 managers and experts with experience in physical education and sports, along with 257 students from three universities in Quang Ngai province (131 male and 126 female), conducted a survey to evaluate the reliability of the initial scale. The research results have identified 04 groups of factors (the teaching behavior of lecturers, satisfaction with basic psychological needs of students, positive motivation in studying the physical education course of students, and student participation in physical education classes) with 33 criteria to evaluate the positivity in studying the physical education course for university students in Quang Ngai province, Vietnam.

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**Keywords:** evaluation criteria, positivity, physical education module, students, Quang Ngai province, Vietnam

## 1. Introduction

The positivity in learning is considered an important psychological quality of learners, manifested in proactivity, self-discipline, enthusiasm, and the effort to mobilize psychological functions to effectively accomplish learning tasks (Hoang & Nguyen, 2012) [1]. The learning motivation not only reflects the drive and cognitive needs but also manifests through the attitudes, behaviors, and levels of participation of learners in the process of acquiring knowledge. In the field of physical education (PE), the positivity of learning is manifested through self-discipline in practice, a spirit of cooperation, a mindset of overcoming difficulties, and active participation in physical activities. This is considered an important condition that contributes to enhancing learning effectiveness, physical development, and the formation of a positive lifestyle for students.

The concept of positivity in learning refers to the process of mobilizing internal factors (cognition, emotions, etc.) with external expressions through gestures, speech, and behavior to achieve learning objectives [2]. The positivity in learning is the individual's positivity, characterized by differentiation, aimed at solving problems and academic tasks to achieve learning goals. The positivity in learning includes both internal and external forms. Although positivity in learning and cognition are closely related (cognitive positivity is a prerequisite for fostering positivity in learning), they are not the same; in many cases, positivity in learning is expressed externally rather than in thought, which is a form of external positivity (behavior, action, method of operation...). Moreover, the positivity in learning also has a causal relationship with the personality traits of the learner, such as self-discipline, independent thinking, proactivity, and creativity [3]. The individual's positivity is closely linked to the subject's positive state. Positivity includes proactivity, creativity, and awareness of the subject in activities. The individual's proactivity is a personality trait characterized by the strong influence of ongoing actions on the subject. Positivity is manifested in one's own efforts, in proactivity, self-discipline, and the high results of purposeful activities of the individual. Positivity is formed and developed in the daily activities of each individual [3], [4].

Approaching from the perspective of modern psychology, the Self-Determination Theory (SDT) by Edward L. Deci and Richard M. Ryan posits that intrinsic motivation and active engagement of learners are formed when three basic psychological needs—autonomy, competence, and relatedness—are satisfied. According to this perspective, learners are more likely to be proactive, persistent, and positive when they feel they have choices, their abilities are affirmed, and they receive support in the learning environment (Deci & Ryan, 2000) [5]. In physical education, creating a learning environment that encourages autonomy, enhances successful experiences, and promotes positive interactions between instructors and students, as well as among students themselves, is considered a crucial foundation for fostering intrinsic motivation and enhancing learning

engagement. This is particularly suitable for the characteristics of the physical education module, where learners directly participate in physical activities, experiences, and group cooperation.

Some studies have developed positivity in a systematic direction and linked it to educational practice. The group of authors Vu Thi Khanh Toan and colleagues (2020) identified factors affecting students' learning motivation, including the environment, instructors, teaching methods, and the students themselves [6]; Nguyen Thi Thanh Tung (2023) applied self-determination theory to clarify the roles of autonomy, competence, and relatedness [7]. The authors Pham Minh Hac, Nguyen Ke Hao, Bui Van Hue, Nguyen Quang Uan... view positivity as a personality trait that includes needs, motives, and interests [8], [9], [10], [11]. Nguyen Anh Tuyet (1999), Hoang Duc Nhuan and Le Duc Phuc (1996), Dao Lan Huong (1999) focused on clarifying the relationship between positivity and the activities and attitudes of learners [12], [13], [14]. At the same time, many international studies also affirm that a learning environment that supports autonomy has a positive impact on intrinsic motivation, learning engagement, and academic outcomes of learners in educational and physical activities (Ryan & Deci, 2020) [15].

Positivity in the direction of formation and development, Nguyen Ngoc Bao (1983, 1991, 1995) affirmed that cognitive positivity is both a goal and a means and result of learning [16], [17], [18]; Dang Vu Hoat (2002) emphasized the role of thinking in mobilizing psychological functions [19]. Tran Ba Hoanh and colleagues (1991, 2003) identified interest and self-discipline as the foundation of active teaching [20], [21]; while Lê Văn Hồng and colleagues (1997) considered learning to be a process of active cognition [22]. Recent experimental studies such as Nguyen Thu Huong (2005) [23], Nguyen Quy Thanh (2007) [24], Pham Văn Tuan (2015) [25], Ngo Duc Chien and colleagues (2022) [26], Le Chi Lan and Do Dinh Thai (2021) [27] have identified groups of influencing factors including motivation, ability, teaching methods, learning environment, and ensuring conditions. These results indicate that learning positivity is influenced by a combination of personal and educational environment factors; among them, a learning environment that supports the basic psychological needs of learners plays a particularly important role in maintaining motivation and active participation.

Some studies on positivity in physical education learning, such as Nguyen Thanh Trung (2015) [28], Mai Thi Nu (2017) [29], Nguyen Viet Hoa (2019) [30], and Le Anh Dung and Ngo Hong Viet (2024) [31], show that currently, students have not yet developed proactivity and positivity during physical education classes. Many students still study reactively, lacking intrinsic motivation, not proactively participating in practice, and not forming the habit of regular exercise. In addition, the organization of physical education teaching at some higher education institutions still leans toward technical instruction, without fully focusing on the psychological needs, interests, and positive experiences of the students.

This framework aims to clarify the nature, structure, and influencing factors of learning motivation, while also linking these concepts to educational practice. However,

the approach based on the theory of self-determination in university physical education is still limited, especially in studies analyzing the relationship between the satisfaction of basic psychological needs and students' learning engagement in physical education courses. Therefore, researching solutions to enhance learning motivation in physical education by developing intrinsic motivation, increasing autonomy, capabilities, and cohesive relationships for students is of significant theoretical and practical importance in the context of current higher education reforms. Accurate, scientific, and comprehensive information about the current situation is needed to select effective solutions for enhancing students' engagement in physical education. With the above importance, we chose to conduct research with the title: "Developing criteria to evaluate the positivity in studying physical education courses for university students in Quang Ngai Province, Vietnam".

## 2. Methodology

### 2.1 Research methods

#### 2.1.1 Method of document analysis and synthesis

This method helps researchers collect, analyze, and synthesize sources of information through reading and taking notes on documents related to the topic. This is a method widely used in scientific research projects. This method helps researchers form the theoretical basis, construct scientific hypotheses, identify research objectives, and verify results during the course of their research.

#### 2.1.2 Interview method

This research method is used in the survey process to collect indirect information based on the questionnaire. The survey questionnaire was developed based on a review of documents and research works related to the thesis's research content, focusing on the issue of physical education for students and evaluating the level of engagement in physical education courses for students.

The survey questionnaires are subjected to reliability testing conducted in the following three steps:

- **Step 1:** Draft the initial preliminary questionnaire.
- **Step 2:** Adjust the scale questionnaire template, determine the response format, and conduct a pilot interview.
- **Step 3:** Test the reliability of the questionnaire through the Cronbach's Alpha index.

After conducting the steps to test the validity and reliability of the survey questionnaire, the official survey questionnaire was fully developed. Conduct a survey using questionnaires among university students in Quang Ngai province.

### 2.1.3 Statistical mathematical methods

This method is used for analyzing and processing the data collected during the research process of the thesis. During the process of processing the thesis data, characteristic parameters and traditional statistical mathematical formulas are used from specialized literature serving the scientific research work in physical education and sports. The data in the thesis were entered and processed using Excel software and SPSS for Windows version 20.0 [32], [33].

### 2.1.4 Research subjects

- Survey to select evaluation criteria and solutions to enhance student engagement in physical education courses: 12 managers and experts with experience in physical education and sports were selected using judgmental and convenience sampling methods.
- 257 students from three universities in Quang Ngai province (131 male and 126 female) were surveyed to evaluate the reliability of the initial scale, selected using simple random and convenience sampling methods.

## 3. Results and Discussion

To accurately assess the current state of student engagement in physical education courses at universities in Quang Ngai province, a scientific and comprehensive evaluation criterion is needed. Thru the synthesis of evaluation criteria from the research works of the authors: Nguyen Thanh Trung (2015) [28]; Mai Thi Nu (2017) [29]; Nguyen Viet Hoa (2019) [30]; Le Anh Dung, Ngo Hong Viet (2024) [31]; Nguyen Thi Hong Loan (2024) [34], the study conducted the identification of evaluation criteria for the current state of student engagement in physical education courses at universities in Quang Ngai province thru a questionnaire on factors enhancing engagement in learning according to the self-determination theory, which includes four groups: teaching behavior of lecturers, satisfaction with basic psychological needs of students, positive motivation in learning, and student participation in physical education classes.

In the field of educational psychology-sociology research (qualitative research), such as the author's topic, the level of perception of data is very complex, requiring a meticulously measured scale and reliability testing before application. The study conducted a reliability test of the questionnaire assessing the current state of positivity in physical education learning among university students in Quang Ngai province, according to the following three steps:

- **Step 1: Draft the preliminary questionnaire template**

Initially, the focus group discussion method was applied to analyze and synthesize research results on the current state of students' active learning in physical education courses from several authors; from there, adjustments and additions were made to suit the specific characteristics of the research subjects. The dissertation results have

developed a preliminary questionnaire (Appendix 1), interviewing 12 managers, physical education experts, and educational psychologists to review the structure, form, content, and purpose of the interview sample to ensure that the measurement variables are multidimensional, objective, and provide additional opinions for testing the measurement scale assessing the current state of positivity in physical education course learning among university students in Quang Ngai province. The response rate from the experts reached 100%, and the results are presented in Table 3.1.

**Table 3.1:** Results of the interview questionnaire measuring the current state of positivity in physical education course learning among university students in Quang Ngai province

| | **Content** | **Interview results** | | |
|---|---|---|---|---|
| | | **Encryption** | **Agreed** | **%** |
| **Teaching behavior of the Lecturer (regarding autonomy, competence, and connection)** | | | | |
| 1 | The lecturer strives to provide students with a certain degree of freedom when carrying out tasks and the necessary comfort when studying. | B1 | 12 | 100.0 |
| 2 | The lecturer encourages students to be proactive and strives to give them the ability to make their own decisions in learning. | B2 | 12 | 100.0 |
| 3 | The lecturer strives to provide the best options for students regarding study content that aligns with their interests and abilities. | B3 | 11 | 91.67 |
| 4 | Instructors need to provide constructive feedback and adjust physical activities to match the abilities and progress levels of students. | B4 | 12 | 100.0 |
| 5 | The lecturer encourages students to trust in their ability to perform their tasks well. | B5 | 12 | 100.0 |
| 6 | Teachers encourage students to be creative and have confidence in completing assignments based on their own abilities. | B6 | 12 | 100.0 |
| 7 | The instructor supports, encourages, and helps students overcome difficulties and strive to complete physical exercises. | B7 | 12 | 100.0 |
| 8 | The instructor promotes a good relationship among classmates. | B8 | 12 | 100.0 |
| 9 | The lecturer creates a close and friendly relationship between the lecturer and students, providing the most favorable conditions for students to connect and communicate. | B9 | 12 | 100.0 |
| 10 | Teachers use group teaching activities and apply physical games in the teaching of physical education. | B10 | 12 | 100.0 |
| 11 | The instructor is ready to assist students in their practice when they need it. | B11 | 10 | 83.33 |
| 12 | The lecturer uses active teaching methods and flexible teaching organization. | B12 | 12 | 100.0 |
| **Satisfaction with the basic psychological needs of students in physical education courses (regarding autonomy, competence, and relatedness)** | | | | |
| 13 | Students actively choose the content and methods of participating in physical education activities that suit themselves. | S1 | 10 | 83.33 |
| **14** | **Students actively participate in deciding and adjusting the implementation of exercises during physical education classes.** | **S2** | **5** | **41.67%** |
| 15 | Students perform exercises that match their own abilities. | S3 | 10 | 83.33 |

| | | | | |
|---|---|---|---|---|
| 16 | Students actively complete the physical education requirements effectively in the physical education module. | S4 | 9 | 75.0 |
| 17 | Students notice progress in physical fitness and skills during the PE (Physical Education) learning process. | S5 | 12 | 100.0 |
| 18 | Students actively participate in training to enhance their abilities in physical education. | S6 | 12 | 100.0 |
| 19 | Students actively interact and cooperate with classmates in physical education activities. | S7 | 12 | 100.0 |
| 20 | Students maintain friendly relationships and support each other in the physical education class. | S8 | 12 | 100.0 |
| 21 | The lecturer applies various effective teaching methods to promote the positivity, proactivity, and creativity of students in the physical education course. | S9 | 12 | 100.0 |
| 22 | Instructors use technology and teaching software to create a vibrant, interactive, and engaging learning environment. | S10 | 12 | 100.0 |
| **Positive motivation in studying the physical education module of students** | | | | |
| 23 | Students actively participate in physical education activities because they feel happy and excited. | M1 | 11 | 91.67 |
| 24 | Students actively participate in engaging and challenging physical education activities. | M2 | 12 | 100.0 |
| 25 | Students actively participate in training to enhance their sports knowledge and skills. | M3 | 11 | 100.0 |
| 26 | Students participate in training to improve their health, fitness, and physique. | M4 | 12 | 100.0 |
| 27 | Students actively participate in practice to learn self-training methods for physical exercise and sports. | M5 | 11 | 91.67 |
| 28 | Students actively participate in physical education activities to socialize, connect, and expand their social relationships. | M6 | 11 | 91.67 |
| 29 | Students actively participate in studying and training to develop self-confidence and self-improvement. | M7 | 11 | 91.67 |
| 30 | Students participate and demonstrate efforts to be recognized and positively evaluated. | M8 | 9 | 75.0 |
| 31 | Students maintain full and active participation in classes to be evaluated as dynamic students. | M9 | 9 | 75.0 |
| 32 | Students actively participate in studying and training to demonstrate their abilities to their families, teachers, and friends. | M10 | 12 | 100.0 |
| **The participation of students in physical education classes** | | | | |
| 33 | Students actively engage and ask the instructor when they do not understand the lesson content, movement techniques, or training methods. | P1 | 11 | 91.67 |
| **34** | **During the training process, the students only participate just enough.** | **P2** | **4** | **33.33%** |
| 35 | The student is determined to overcome difficulties to complete the training task. | P3 | 12 | 100.0 |
| 36 | Students are passionate, exploring and discovering the knowledge within the learning content. | P4 | 11 | 91.67 |
| 37 | Students are aware of the importance of self-study and completing their academic tasks. | P5 | 11 | 91.67 |

| | | | | |
|---|---|---|---|---|
| 38 | Students are active, enthusiastic, and proactive in participating in classroom learning activities. | P6 | 12 | 100.0 |
| 39 | Students proactively prepare their outfits and training equipment for each class. | P7 | 11 | 91.67 |

According to the interview results in Table 3.1, 37 of 39 questions received a high agreement rate of ≥75.0%. Only 2 questions, "Students actively participate in deciding and adjusting the implementation of exercises during physical education classes (HL2)" with 5 responses at a rate of 41.67% and "During training, students only participate adequately (TG2)" with 4 responses at a rate of 33.33%, were decided to be removed.

- **Step 2: Adjust the scale questionnaire template and determine the response format.**

Thru the survey results and additional opinions from experts, I adjusted the questions to align with the initial questionnaire (Appendix 2) and proceeded to collect data processed using SPSS 20.0 software. The questionnaire measuring the current state of positive learning in physical education courses among university students in Quang Ngai province consists of 04 criteria groups with 37 items.

Determine the response format: In the thesis, the author applies the response format according to the 5-point Likert scale: (1) Rarely; (2) Occasionally; (3) Usually; (4) Frequently; (5) Always.

- **Step 3: Measure validation**

**A. Internal consistency reliability test (Cronbach's Alpha)**

The study conducted a randomized trial survey on 257 second-year students from three universities in Quang Ngai Province according to the adjusted questionnaire sample. After collecting and screening the data, the variables in the draft scale were included to test internal reliability in order to eliminate junk variables from the scale. The detailed analysis results are presented in Table 3.2.

**Table 3.2:** The results of the Cronbach's Alpha reliability analysis of the scale measuring the positivity in learning in the Physical Education module of university students in Quang Ngai province

| Question section | Cronbach's Alpha if item deleted | Cronbach's Alpha if item deleted | Cronbach's Alpha if item deleted | Cronbach's Alpha if item deleted |
|---|---|---|---|---|
| Teaching behavior of the Lecturer (regarding autonomy, competence, and connection) | | | | |
| B01 | 48.9883 | 35.816 | .770 | .921 |
| B02 | 48.8599 | 36.347 | .779 | .921 |
| B03 | 48.9728 | 36.550 | .734 | .923 |
| B04 | 48.9105 | 36.582 | .749 | .922 |
| B05 | 48.8093 | 37.288 | .749 | .922 |
| B06 | 48.8405 | 36.721 | .775 | .921 |
| B07 | 48.7860 | 36.981 | .795 | .921 |
| B08 | 48.9961 | 36.387 | .716 | .923 |

| | | | | |
|---|---|---|---|---|
| B09 | 48.8366 | 36.739 | .788 | .921 |
| B10 | 49.1362 | 36.845 | .626 | .927 |
| B11 | 49.2996 | 40.531 | .251 | .942 |
| B12 | 48.8444 | 36.343 | .737 | .922 |
| *Cronbach's Alpha coefficient of the scale = .930* | | | | |
| **Satisfaction with the basic psychological needs of students in physical education courses (regarding autonomy, competence, and relatedness)** | | | | |
| S01 | 34.6848 | 22.115 | .742 | .872 |
| S03 | 34.5214 | 22.251 | .796 | .868 |
| S04 | 35.4163 | 23.267 | .279 | .935 |
| S05 | 34.5525 | 22.436 | .778 | .870 |
| S06 | 34.6109 | 22.051 | .807 | .867 |
| S07 | 34.5603 | 22.349 | .787 | .869 |
| S08 | 34.3268 | 23.588 | .689 | .878 |
| S09 | 34.4942 | 23.313 | .717 | .876 |
| S10 | 34.3969 | 23.467 | .684 | .878 |
| *Cronbach's Alpha coefficient of the scale = .891* | | | | |
| **Positive motivation in studying the physical education module of students** | | | | |
| M01 | 38.2763 | 36.505 | .727 | .823 |
| M02 | 38.2724 | 35.918 | .767 | .820 |
| M03 | 38.3074 | 35.784 | .800 | .818 |
| M04 | 38.2179 | 36.390 | .770 | .821 |
| M05 | 38.2646 | 36.102 | .773 | .820 |
| M06 | 38.1868 | 36.434 | .764 | .822 |
| M07 | 38.2685 | 35.283 | .785 | .817 |
| M08 | 38.7043 | 37.092 | .293 | .867 |
| M09 | 39.2763 | 35.966 | .194 | .911 |
| M10 | 38.3191 | 35.788 | .722 | .821 |
| *Cronbach's Alpha coefficient of the scale = .848* | | | | |
| **The participation of students in physical education classes** | | | | |
| P01 | 10.2529 | 4.205 | .531 | .705 |
| P03 | 10.3424 | 4.109 | .571 | .693 |
| P04 | 10.5447 | 4.163 | .566 | .696 |
| P05 | 10.3813 | 4.245 | .463 | .723 |
| P06 | 10.4475 | 4.373 | .402 | .740 |
| P07 | 10.4241 | 4.331 | .422 | .734 |
| *Cronbach's Alpha coefficient of the scale = .751* | | | | |

The data in Table 3.2 shows the following:

The results of the scale validation for evaluating the teaching behavior of lecturers (regarding autonomy, competence, and relationships) in the physical education course using the Cronbach's Alpha index indicate the following: The overall Cronbach's Alpha coefficient = 0.930 > 0.6, with 11 items having a correlation coefficient with the total variable greater than the permissible standard (> 0.3). Only one item, "The instructor is willing to assist students in practice when they need help (B11)," has a total variable correlation coefficient < 0.3, so this item will be removed.

The results of the scale validation for assessing student satisfaction with basic psychological needs (autonomy, competence, and relatedness) in physical education courses using the Cronbach's Alpha index show: The overall Cronbach's Alpha coefficient = 0.891 > 0.6, with 8 items having a correlation coefficient with the total variable greater than the permissible standard (> 0.3). Only one item, "Students actively complete the physical education requirements effectively (S4)," has a total variable correlation coefficient < 0.3, so this item will be removed.

The results of the scale validation for assessing students' positive motivation in physical education courses using the Cronbach's Alpha index show: The overall Cronbach's Alpha coefficient = 0.848 > 0.6, with 8 out of 10 items having a correlation coefficient with the total variable greater than the allowed standard (> 0.3). There are 2 out of 10 items, "Students participate and show effort to be recognized and positively evaluated (M8)" and "Students maintain full and active participation in classes to be evaluated as dynamic students (M9)," with a total variable correlation coefficient < 0.3, so these two items are removed.

The results of the measurement scale test for evaluating student participation in physical education courses using the Cronbach's Alpha index show: The overall Cronbach's Alpha coefficient = 0.751 > 0.6, with 6 items having a correlation coefficient with the total variable greater than the allowed standard (>0.3). The observed variables meet the requirements to proceed with the next steps of analysis.

The study conducted a second analysis of the Cronbach's Alpha reliability coefficient of the scale measuring the positivity in learning in the physical education module of university students in Quang Ngai province after removing the items according to the analysis in Table 3.2, resulting in the findings in Table 3.3.

**Table 3.3:** The results of the second Cronbach's Alpha reliability analysis of the scale measuring the positivity in learning in the Physical Education module of university students in Quang Ngai province

| Question section | Cronbach's Alpha if item deleted | Cronbach's Alpha if item deleted | Cronbach's Alpha if item deleted | Cronbach's Alpha if item deleted |
|---|---|---|---|---|
| **Teaching behavior of the Lecturer (regarding autonomy, competence, and connection)** | | | | |
| B01 | 44.8988 | 32.919 | .777 | .935 |
| B02 | 44.7704 | 33.498 | .777 | .935 |
| B03 | 44.8833 | 33.674 | .734 | .937 |
| B04 | 44.8210 | 33.624 | .760 | .936 |
| B05 | 44.7198 | 34.312 | .759 | .936 |
| B06 | 44.7510 | 33.821 | .778 | .935 |
| B07 | 44.6965 | 34.033 | .804 | .935 |
| B08 | 44.9066 | 33.507 | .717 | .938 |
| B09 | 44.7471 | 33.791 | .797 | .935 |
| B10 | 45.0467 | 33.990 | .622 | .942 |
| B12 | 44.7549 | 33.436 | .742 | .937 |
| *Cronbach's Alpha coefficient of the scale = .942* | | | | |

| | | | | |
|---|---|---|---|---|
| **Satisfaction with the basic psychological needs of students in physical education courses (regarding autonomy, competence, and relatedness)** | | | | |
| S01 | 31.1556 | 17.765 | .711 | .932 |
| S03 | 30.9922 | 17.687 | .800 | .924 |
| S05 | 31.0233 | 17.820 | .787 | .925 |
| S06 | 31.0817 | 17.497 | .812 | .923 |
| S07 | 31.0311 | 17.640 | .815 | .923 |
| S08 | 30.7977 | 18.459 | .775 | .926 |
| S09 | 30.9650 | 18.456 | .755 | .928 |
| S10 | 30.8677 | 18.514 | .736 | .929 |
| *Cronbach's Alpha coefficient of the scale = .935* | | | | |
| **Positive motivation in studying the physical education module of students** | | | | |
| M01 | 30.9027 | 23.268 | .813 | .947 |
| M02 | 30.8988 | 22.794 | .852 | .945 |
| M03 | 30.9339 | 22.914 | .854 | .944 |
| M04 | 30.8444 | 23.429 | .821 | .947 |
| M05 | 30.8911 | 23.183 | .824 | .946 |
| M06 | 30.8132 | 23.356 | .831 | .946 |
| M07 | 30.8949 | 22.446 | .844 | .945 |
| M10 | 30.9455 | 22.981 | .760 | .951 |
| *Cronbach's Alpha coefficient of the scale = .953* | | | | |

The data in Table 3.3 shows the results of the second Cronbach's Alpha analysis of the scale measuring the positivity in learnshow the results of the second Cronbach's Alpha analysis of the scale measuring positivity toward learning the Physical Education module amongturers in meeting and supporting the basic psychological needs of students in learning the Physical Education module (regarding autonomy, competence, and relatedness), the Satisfaction with the basic psychological needs of students in learning the Physical Education module (regarding autonomy, competence, and relatedness), and the Positive Motivation in learning the Physical Education module of students. All have a total Cronbach's Alpha coefficient = 0.942, 0.935, 0.953 > 0.6; all items have a Corrected Item-Total Correlation greater than the permissible standard (> 0.3). The observed variables meet the requirements to proceed with the next steps of analysis.

The results of the research analysis have identified a scale to assess the positivity in learning the Physical Education module of university students in Quang Ngai province, consisting of 33 items divided into 4 groups:

- The teaching behavior of lecturers in responding to and supporting the basic psychological needs of students in the Physical Education course (regarding autonomy, competence, and relatedness): 11 items.
- Satisfaction with the basic psychological needs of students in the physical education course (regarding autonomy, competence, and relatedness): 8 questions.
- Positive motivation in studying the physical education course of students: 8 questions
- Student participation in physical education classes: 6 questions

**B. Exploratory Factor Analysis (EFA)**

The exploratory factor analysis (EFA) method is a multivariate analysis to determine the degree of convergence of variables within factors. The results of the reliability test of the scale using the Cronbach's Alpha coefficient identified 33 variables within 4 factors affecting the scale measuring the current state of positive attitudes in physical education learning among university students in Quang Ngai province. The study conducted an exploratory factor analysis, and the results are presented in Table 3.4.

**Table 3.4:** Results of the KMO and Bartlett's Test for independent variables

| | | |
|---|---|---|
| KMO coefficient (Kaiser-Meyer-Olkin) | | .948 |
| Bartlett's test | Chi-square value | 7213.107 |
| | Df | 528 |
| | Sig | .000 |

The analysis results in Table 3.4 show that the KMO coefficient = 0.948 > 0.5, meaning that the factor analysis is appropriate for the research data. The Bartlett's Test has a Chi-Square value of 7213.107 with a significance level (Sig) of 0.000<0.05 (rejecting the null hypothesis H0). The above result proves that the data for the exploratory factor analysis (EFA) is completely appropriate. Conducting the variance analysis yielded the results in Table 3.5.

**Table 3.5:** Variance extracted from the independent variable scale

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of variance | Cumulative % | % of variance | Cumulative % | % of variance |
| 1 | 16.175 | 49.015 | 49.015 | 16.175 | 49.015 | 49.015 |
| 2 | 3.132 | 9.490 | 58.505 | 3.132 | 9.490 | 58.505 |
| 3 | 1.314 | 3.982 | 62.487 | 1.314 | 3.982 | 62.487 |
| 4 | 1.234 | 3.741 | 66.228 | 1.234 | 3.741 | 66.228 |

The data in Table 3.5 shows that the variance extracted from the independent variable measurement scale has 04 factors extracted from 33 observed variables with a total extracted variance of 66.228% (> 50%) and an eigenvalue coefficient of 1.234 (> 1.0), meeting the requirements. This shows that the observed variables of the factor explain 66.228% of the variation in each factor. The factor rotation matrix analysis is presented in Table 3.6.

**Table 3.6:** Factor rotation matrix results

| | Observed variable | Factor group | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| 1 | B04 | .750 | | | |
| 2 | B07 | .745 | | | |
| 3 | B02 | .733 | | | |
| 4 | B05 | .727 | | | |
| 5 | B06 | .712 | | | |
| 6 | B09 | .709 | | | |

| | | | | | |
|---|---|---|---|---|---|
| 7 | B01 | .694 | | | |
| 8 | B03 | .633 | | | |
| 9 | B12 | .594 | | | |
| 10 | B08 | .591 | | | |
| 11 | B10 | .550 | | | |
| 12 | S06 | | .774 | | |
| 13 | S07 | | .753 | | |
| 14 | S03 | | .747 | | |
| 15 | S05 | | .740 | | |
| 16 | S01 | | .739 | | |
| 17 | S08 | | .724 | | |
| 18 | S09 | | .709 | | |
| 19 | S10 | | .649 | | |
| 20 | M07 | | | .723 | |
| 21 | M02 | | | .713 | |
| 22 | M03 | | | .676 | |
| 23 | M06 | | | .657 | |
| 24 | M05 | | | .632 | |
| 25 | M01 | | | .607 | |
| 26 | M04 | | | .597 | |
| 27 | M10 | | | .558 | |
| 28 | P03 | | | | .762 |
| 29 | P04 | | | | .738 |
| 30 | P01 | | | | .720 |
| 31 | P05 | | | | .604 |
| 32 | P06 | | | | .552 |
| 33 | P07 | | | | .545 |

The data in Table 3.6 shows that the factor loadings are all greater than 0.5 and no variable loads onto two factors with close loading coefficients at the same time (ensuring discriminant and convergent validity). Therefore, the factors ensure convergent and discriminant validity in the exploratory factor analysis (EFA). In addition, there is no overlap between the factors, meaning that the questions of one factor do not get mixed up with the questions of another factor. Therefore, after the factor analysis, the independent variables remain unchanged, neither increased nor decreased. The results of the exploratory factor analysis (EFA) for the independent variables are as follows: KMO coefficient = 0.948 > 0.6; Significance level Sig = 0.000; The total variance extracted reached 66.228%; Eigenvalues = 1.234 (>1.0); the observed variables have factor loadings greater than 0.5 and converge to a single factor.

The results of the analysis, it shows: The Principal Component Analysis method with Varimax rotation was used for factor analysis on 33 observed variables. All 33 variables have weights greater than 0.5, indicating that all variables meet the standards for data analysis and evaluation in the study. The results show that the composition of the factors did not differ from the initially expected composition, so the author retained the original group names. Throughout the analysis steps, a scale for evaluating the

positivity in studying the physical education module of university students in Quang Ngai province has been developed, including:

- The group of teaching behaviors of lecturers (regarding autonomy, competence, and connection) in the physical education course includes 11 questions: The lecturer strives to provide students with a certain degree of freedom when carrying out tasks and the necessary comfort when studying (B1); The lecturer encourages students to be proactive and strives to provide them with the ability to make independent decisions in their studies (B2); The instructor strives to provide the best options for students regarding learning content that aligns with their interests and abilities (B3); Instructors need to provide constructive feedback and adjust physical activities to match students' abilities and progress levels (B4); The instructor encourages students to trust in their ability to perform their tasks well (B5); The instructor encourages students to be creative and have confidence in completing tasks well based on their own abilities (B6); The instructor supports, encourages, and helps students overcome difficulties and strive to complete physical exercises (B7); The instructor fosters good relationships among classmates (B8); The lecturer creates a close and friendly relationship between the lecturer and students, providing the most favorable conditions for students to connect and communicate (B9); The instructor uses group teaching activities and applies physical games in teaching the physical education module (B10) and The instructor uses active teaching methods and flexible teaching organization (B12).
- The group of satisfaction regarding the basic psychological needs of students (autonomy, competence, and relatedness) in the physical education course includes 8 questions: Students actively choose the content and methods of participating in physical education activities that suit themselves (S1); Students perform exercises that match their own abilities (S3); Students notice progress in physical fitness and skills during the process of studying Physical Education (S5); Students actively participate in training to enhance their personal abilities in physical education (S6); Students actively interact and cooperate with classmates in physical education activities (S7); Students maintain friendly relationships and support each other in the physical education class (S8); The instructor applies various effective teaching methods to promote positivity, proactivity, and creativity among students in the physical education course (S9) and The instructor uses technology and teaching software to create a lively, interactive, and engaging learning environment (S10).
- The group of positive motivation in studying the physical education course for students includes 8 questions: Students actively participate in physical education activities because they feel happy and excited (M1); students proactively engage in attractive and challenging physical education content (M2); students actively participate in training to enhance their sports knowledge and skills (M3); students engage in training to improve their health, fitness, and physique (M4); students proactively participate in practice to learn self-training methods for physical

exercise (M5); Students actively participate in physical education activities to socialize, connect, and expand their social relationships (M6), students actively engage in studying and training to develop self-confidence and self-improvement (M7), and Students actively participate in studying and training to demonstrate their abilities to their families, teachers, and friends (M10).

- The group participation of students in physical education classes includes 6 questions: Students actively engage in discussions and ask the instructor when they do not understand the lesson content, movement techniques, or training methods (P1); Students are determined to overcome difficulties to complete their training tasks (P3); Students are passionate, exploring and discovering knowledge within the learning content (P4); Students are aware of the importance of self-study and completing their learning tasks (P5); Students actively, enthusiastically, and proactively participate in classroom learning activities (P6) and Students proactively prepare their outfits and training equipment for each class (P7).

## 4. Conclusion

The research results have identified 04 groups of factors with 33 criteria for evaluating the positivity in learning the Physical Education module for university students in Quang Ngai province, Vietnam, including:

- Group of teaching behaviors of lecturers (regarding autonomy, competence, and relatedness) in the Physical Education course: 11 criteria.
- Group of satisfaction with the basic psychological needs of students (regarding autonomy, competence, and relatedness) in the physical education course: 8 criteria.
- Group of positive motivation in students' learning of the physical education module: 8 criteria
- Group participation of students in physical education classes: 6 criteria.



**Conflict of Interest Statement**
The authors declare no conflicts of interest.

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