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Nguyen Do Minh Son
Saigon University, Ho Chi Minh City, Vietnam

Huynh Trong Khai
Ho Chi Minh City University of Physical Education and Sports, Ho Chi Minh City, Vietnam

Corresponding Author:
Nguyen Do Minh Son
Saigon University, Ho Chi Minh City, Vietnam

Improving male student's satisfaction could enhance their physical fitness: A case study in physical education courses at Saigon University

Nguyen Do Minh Son and Huynh Trong Khai

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Abstract
The purpose of this study was to determine the influence of satisfaction on the physical fitness of male students at Saigon University. A total of 371 male students volunteered to participate and were randomly allocated to either an experimental or control group. The experimental group implemented strategies designed to enhance satisfaction, while the control group followed a standardized 15-week training program. Independent sample t-tests and one-way ANCOVA were employed to analyze variations in satisfaction and physical fitness levels among students before and after the intervention, as well as between the two groups. Findings revealed significant differences in physical fitness between students in the experimental group, who implemented satisfaction-enhancing strategies, and those in the control group. These results suggest a positive correlation between increased satisfaction and improved physical fitness among male university students. To gain a more comprehensive understanding, further research is necessary to evaluate satisfaction levels across diverse populations considering factors such as age, training expertise, and specific sports disciplines.

Keywords: Physical fitness, physical education courses, student's satisfaction, 15-week experiment, Saigon University

1. Introduction
According to previous researchers (Lemes *et al*., 2021; Mario *et al*., 2011; Aibar *et al*., 2021; Extremera *et al*., 2015) [10, 11, 1, 5] have shown a positive relationship between satisfaction and physical improvement due to participating in physical activity. Feelings of satisfaction not only promoted exercise motivation but also improved performance and overall health (Gao, 2009; Villafaina *et al*., 2021) [6, 18]. Research by Bastug & Duman (2010) [2] also confirmed the positive impact of exercise on both physical and psychological health, thereby increasing the satisfaction of the practitioner. However, satisfaction was not the only factor that determines exercise effectiveness. According to Nguyen Thi Trang (2010) [16], other factors such as plan of training, nutrition, and proper rest also played an important role. Research by Zhang *et al*. (2022) [21] and Wypych-Ślusarska *et al*. (2023) [19] also pointed out that, in addition to satisfaction, factors such as major, marital status, and body image evaluation also affect physical activity participation. There were many definitions on satisfaction as well as debate on this issue in each specific field. Hoyer & MacInnis (2001) [8] argue that satisfaction is associated with feelings of acceptance (of the product in use), happiness, relief, feelings of excitement and joy. Therefore, customer retention is the act of satisfying customers with the intention of developing long-term relationships while satisfying the above requirements. According to Hansemark & Albinsson (2004) [7], customer satisfaction is the customer's general attitude toward the service provider, or the emotional response to the difference between what the customer anticipated and what he or she received. receiving, relating to the fulfillment of some need, goal or desire. According to Kotler & Gary (2012) [9], satisfaction or satisfaction is the level of a person's feeling state that results from comparing the results obtained from a product or service with the person's expectations. Customer satisfaction is when customers form subjective assessments or judgments based on their understanding of a product or service. It is a psychological feeling after a customer's needs are satisfied.

Customer satisfaction is formed on the basis of experiences, especially accumulated when shopping and using products or services. After purchasing and using the product, customers will compare reality and expectations, thereby evaluating satisfaction or dissatisfaction (Mario *et al*., 2011) [11]. Thus, it is understandable that feelings of comfort or perhaps disappointment arise from buyers making comparisons between the actual benefits of the product and their expectations (Chung & Hew, 2005) [3]. Whether customers are satisfied or not after making a purchase depends on how they compare the actual benefits of the product with their expectations before using/or buying.

Therefore, in education in general, it was no exception, student retention and student satisfaction are one of the prerequisites to improve training quality and maintain the position of students. With this perspective, to survive, develop and attract learners, universities need to constantly improve the quality of training. To achieve this, student and customer satisfaction is the main factor that brings success to universities. Every school wants its students to be satisfied with the products they provide. According to Sierra-Díaz *et al*. (2019) [14] believed that physical education in universities might build good habits related to a healthy lifestyle while practicing sports and other physical activities. Therefore, it was necessary to motivate students to participate in physical training and sports, so that they would be more interested in participating in classroom activities (Cox *et al*., 2008) [4]. Students who got clear motivation when participating in physical training would feel more joy and desire to participate in sports activities in the future (Ntoumains, 2005) [13]. Besides, physical education at Saigon University played an important role in forming a healthy lifestyle for students. To improve the effectiveness of this work, it was necessary to assess student satisfaction. By understanding the factors that affect student satisfaction, schools can offer appropriate solutions to improve teaching quality and better meet student needs. Through this study, we wanted to clarify the relationship between satisfaction and physical development, especially in a physical education environment that has not been mentioned by many studies. This study aimed to fill this knowledge gap by exploring the impact that improving male students' satisfaction has on the physical training process at Saigon University.

2. Materials and Methods

2.1 Participants

A total of 380 physically fit male students enrolled in six sports courses (basketball, volleyball, 1500m running, football, table tennis, and badminton) at Saigon University participated in a 15-week study (equivalent to one semester). To evaluate the impact of physical fitness on satisfaction levels among these students, a research design was implemented. All six sports groups were included in the study, with each group comprising six courses. From these courses, three were randomly assigned to the experimental group for solution implementation, while the remaining three served as the control group.

2.2 Data collection

07 satisfaction factors were identified for measuring student satisfaction levels: facilities, instructors, program implementation, training curriculum, support services, issue resolution, and outcome expectations (Son *et al*., 2023) [15].

To assess the physical fitness of male students at Saigon University, 04 tests were selected: a 30m sprint (speed), a 4x10m run (agility), a standing jump (lower body power), and a 5-mins running test (maximal aerobic speed or MAS). These tests aligned with the Ministry of Education & Training's in Vietnam guidelines for evaluating amateur athletes (MET, 2008) [12] and have been validated for assessing general fitness in physical education courses at Saigon University (Tuan *et al*., 2017) [17].

2.3 Procedures

Two weeks prior to the commencement of the experiment, participants completed a questionnaire detailing their personal information, training routines, and any previous sports injuries. All participants were introduced to the fitness tests and their administration procedures. Informed consent was obtained from each participant after a comprehensive explanation of the study protocol. Participants were instructed to maintain their regular diet and physical activity levels throughout the research period.

Subsequently, all participants engaged in a standardized 15-week physical education (PE) program characterized by consistent conditions, duration, and facility utilization. PE classes were conducted on Monday, Tuesday, Wednesday, and Thursday mornings from 7:00 AM to 10:40 AM. The experimental group implemented seven strategies aimed at enhancing student satisfaction.

- **+ Solution 1:** Provide adequate facilities (i.e. training equipments, playground, safety conditions…)
- **+ Solution 2:** Improve the quality of human resources (i.e. coaching experiences, techniques, and methods in teaching…)
- **+ Solution 3:** Enhance the physical education learning experience in students (especially in female)
- **+ Solution 4:** Education on the role and importance of physical education in students (i.e. organize many annual sports festivals, events to raise awareness about the role of sports training…)
- **+ Solution 5:** Improve the contents of training in PE courses (sport games in training)
- **+ Solution 6:** Digitize learning materials and reference books about sports in PE courses.
- **+ Solution 7:** Create a dynamic and fun training environment.

2.4 Statistical analysis

Data analysis was conducted using SPSS for Windows version 24. Independent sample t-tests were employed to assess differences in satisfaction levels between the experimental and control groups. One-way ANCOVA, adjusted with Bonferroni post-hoc tests, was utilized to determine variations in fitness test results between the two groups. Statistical significance was established at a p-value of less than 0.05. Data is presented as mean ± standard deviation (x ± SD).

3. Results and Discussions

The characteristics of the study were described in Table 1.

Table 1: Characteristics of participants (n=371)

Age (years)	Height (cm)	Weight (kg)
19.19±0.83	171.28±5.31	63.49±9.27

A total of 371 male students completed the 15-week physical education (PE) course at Saigon University. This number reflects a reduction in participants due to dropouts caused by

health issues, personal circumstances, or other factors. The remaining students were evenly distributed across the experimental and control groups. The average age, height, and weight of the participants were 19.09 ± 0.77 years, 157.93 ± 5.23 cm, and 49.56 ± 7.21 kg, respectively. Table 2 demonstrates that students in the experimental group exhibited significantly higher satisfaction ratings across all seven factors compared to the control group following the intervention. Furthermore, Tables 3 and 4 present the physical fitness results for male students, including performance data for the 30-second sit-up test, 30-meter sprint, standing long jump, and 5-minute running field test.

The results indicated that, with Bonferroni post-hoc adjustment on the group of male students at Saigon University, there were statistically significant difference in standing jump test between the experimental group (220.37±8.18 cm) and the control group (213.74±2.07 cm), $F(1, 368)=105.802$, $p=0.000<0.05$, $\eta=0.223$; in *30 seconds sit-up* test between the experimental group (21.99±0.94 times) and the control group (21.38±0.75 times), $F(1, 368)= 46.691$, $p=0.000<0.05$, $\eta=0.113$; in 30m sprint test between the experimental group (4.09±0.43 s) and the control group (4.32±0.16 s), $F(1, 368)= 42.400$, $p=0.000<0.05$, $\eta=0.103$; in the 5min running test between the experimental group (1183.61±108.4 m) and the control group (1037.18±33.22 m), $F(1, 368)= 309.972$, $p=0.000<0.05$, $\eta=0.457$.

Table 2: Results of male student's satisfaction

Factors	Group	Levene	Sig.	Mean ± SD	t	df	p
Facilities	Control	0.201	.654	2.71±0.78	-35.34	1376	.000
	Experimental			4.16±0.74			
Lecturers	Control	82.121	.000	3.76±0.66	-22.49	1240.34	.000
	Experimental			4.45±0.47			
The implementation	Control	276.34	.000	2.7±1.24	-36.09	1172.46	.000
	Experimental			4.74±0.8			
Training program	Control	85.21	.000	3.91±0.86	-15.02	1337.71	.000
	Experimental			4.55±0.73			
Support process	Control	95.72	.000	2.79±1.25	-22.45	1289.63	.000
	Experimental			4.14±0.97			
Problem responsiveness	Control	10.12	.002	2.68±0.92	-30.12	1356.27	.000
	Experimental			4.11±0.83			
Expected results	Control	79.39	.000	3.14±0.92	-26.81	1226.4	.000
	Experimental			4.28±0.65			

Table 3: Data on physical fitness level among male students (n=371)

Test	Time	Experimental group (n=192)	Control group (n=179)
1	Pre-test	207.96±2.02	207.55±2.03
	Post-test	220.37±8.18	213.74±2.07
2	Pre-test	19.83±0.75	19.75±0.66
	Post-test	21.99±0.94	21.38±0.75
3	Pre-test	4.52±0.13	4.53±0.11
	Post-test	4.09±0.43	4.32±0.16
4	Pre-test	971.56±14.59	972.08±14.58
	Post-test	1183.61±108.4	1037.18±33.22

Note: 1- Standing jump test (cm), 2-30 seconds sit-up test (time), 3- 30m sprint test (s), 4-5min running field test.

Studies in authors Lemes *et al*., 2021 [10]; Mario *et al*., 2011 [11]; Aibar *et al*., 2021 [1]; Extremera *et al*., 2015 [5] showed that student satisfaction with physical activities is closely related to exercise motivation and physical training effectiveness. When students feel satisfied, they tend to participate in workouts more often and achieve better results. However, satisfaction does not only depend on physical factors but is also related to other factors such as psychology, training environment and personal characteristics. This study has demonstrated through our research that enhancing student satisfaction through appropriate solutions can contribute to improving the general fitness level of male students studying Physical Education classes. At Saigon University.

Our research shows that student satisfaction with different sports depends on many factors, especially the nature and form of practice of each subject. Therefore, to improve training effectiveness, there needs to be specific and appropriate solutions for each sport group, and even each individual. Many previous studies have confirmed a positive relationship between satisfaction and physical activity participation. When people are satisfied, they tend to exercise more often and achieve better results. This can be explained by the fact that satisfaction motivates, reduces stress and helps the body function more effectively. Research by Bastug & Duman (2010) [2] also shows that exercising not only improves physical health but also enhances mental health, thereby contributing to increased satisfaction of the practitioner. In short, satisfaction plays an important role in promoting exercise and physical development. To increase satisfaction, it is necessary to create a fun training environment that suits personal preferences and the characteristics of each sport.

Table 4: Differences in general fitness level among male students

Test	Source	SS	df	MS	F	Sig.	η
1	Pre-test	308.991	1	308.991	8.584	.004	0.023
	Group	3808.278	1	3808.278	105.802	.000	0.223
	Error	13245.93	368	35.994			
2	Pre-test	10.678	1	10.678	15.202	.000	0.040
	Group	32.796	1	32.796	46.691	.000	0.113
	Error	258.484	368	.702			
3	Pre-test	1.195	1	1.195	11.394	.001	.030
	Group	4.448	1	4.448	42.400	.000	.103
	Error	38.606	368	.105			
4	Pre-test	67499.386	1	67499.386	10.468	.001	.028
	Group	1998817.09	1	1998817.09	309.972	.000	.457
	Error	2373005.95	368	6448.386			

Note: SS-Sum of Square, df-degree of freedom, MS-Mean Square, η-Eta squared

Satisfaction with training was an important factor, but not the only factor that determines training effectiveness. Research by Nguyen Thi Trang (2010) [16] noted to achieve the best results, it was necessary to combine satisfaction with other factors such as a scientific exercise plan, reasonable nutrition, and adequate rest. enough and psychologically comfortable. Recent studies also showed a complex relationship between satisfaction and exercise. Research by Zhang *et al*. (2022) [21] showed that, in non-sports students, exercise did not significantly affect overall satisfaction. However, exercise still brings many other benefits such as improving mental health and reducing stress.

In contrast, students majoring in sports often have higher levels of satisfaction because the training process helps them achieve personal goals and develop skills. The results of the study by Wypych-Ślusarska *et al*. (2023) [19] and Yoo & Lee (2022) [20] also showed that, in young women, factors such as marital status and body confidence have a greater influence on satisfaction than exercise. To make its effective, we need to consider it comprehensively, not only focusing on feeling satisfied but also paying attention to other factors such as training plan, nutrition, and various personal factors. Our results have proven that learner satisfaction played an important role in improving physical fitness, especially for non-sports students, as well as increased the satisfaction of students at Saigon University through specific solutions has contributed to significantly improving the general physical level. However, focusing on Saigon University students would make results not generalizable to other subjects and different universities, it might be our limitation in this study. Therefore, this study has made an important contribution to understanding the relationship between satisfaction and physical fitness improvement. Future studies are needed to have a comprehensive view and provide more specific recommendations for improving the quality of physical activity in universities.

4. Conclusion

In conclusion, the implementation of strategies to enhance satisfaction positively impacted the physical fitness of male students at Saigon University. To further elucidate the relationship between satisfaction and physical fitness, additional research is necessary to examine diverse populations, considering factors such as age, training experience, and specific sports disciplines.

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